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No. ———

IN THE
Supreme Court of the United States
OCTOBER TERM, 1983

EXXON CORPORATION, *et al.*,
Petitioners,

v.

INTERSTATE NATURAL GAS ASSOCIATION OF AMERICA, *et al.*

APPENDICES TO PETITION FOR A WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE DISTRICT OF COLUMBIA CIRCUIT AND LIST OF PARENT COMPANIES, SUBSIDIARIES, AND AFFILIATES REQUIRED BY RULE 28.1

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* Petitioners have printed only those portions of the "Interim Regulations" which are relevant to the Btu question; the other portions of the "Interim Regulations" are not relevant to the issues before the court of appeals or before this Court.

† Petitioners have printed only those portions of the "Notice Of Proposed Rulemaking" which are relevant to the Btu question; the other portions of the "Notice Of Proposed Rulemaking" are not relevant to the issues before the court of appeals or before this Court.

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APPENDIX A

UNITED STATES COURT OF APPEALS FOR THE DISTRICT OF COLUMBIA CIRCUIT

No. 81-1690

INTERSTATE NATURAL GAS ASSOCIATION OF AMERICA,
Petitioner

v.

FEDERAL ENERGY REGULATORY COMMISSION,
Respondent

MOBIL OIL CORPORATION, ET AL.,
GENERAL AMERICAN OIL COMPANY OF TEXAS,
PHILLIPS PETROLEUM COMPANY,
PENNZOIL COMPANY,
MISSISSIPPI RIVER TRANSMISSION CORP.,
SHELL OIL COMPANY,
EXXON CORPORATION,
LACLEDE GAS COMPANY,
GETTY OIL COMPANY,
LOUISIANA LAND & EXPLORATION COMPANY,
ASSOCIATED GAS DISTRIBUTORS,
NORTHERN NATURAL GAS COMPANY,
TEXAS GAS TRANSMISSION CORPORATION,
TEXACO, INC.,
TENNECO OIL COMPANY,
HOUSTON OIL AND MINERALS CORPORATION,
GULF OIL CORPORATION,
PLACID OIL COMPANY,
AMINOIL, USA, INC., ET AL.,
Intervenors

No. 81-1680

MICHIGAN WISCONSIN PIPELINE COMPANY,
Petitioner

v.

FEDERAL ENERGY REGULATORY COMMISSION,
Respondent

MOBIL OIL CORPORATION, ET AL.,
AMOCO PRODUCTION COMPANY,
GENERAL AMERICAN OIL COMPANY OF TEXAS,
PHILLIPS PETROLEUM COMPANY,
PENNZOIL COMPANY,
EXXON CORPORATION,
SHELL OIL COMPANY,
TENNECO OIL COMPANY,
UNION OIL COMPANY OF CALIFORNIA,
LOUISIANA LAND & EXPLORATION COMPANY,
GETTY OIL COMPANY,
ASSOCIATED GAS DISTRIBUTORS,
LACLEDE GAS COMPANY,
SUN OIL COMPANY,
ARCO OIL & GAS COMPANY,
PLACID OIL COMPANY,
TEXACO, INC.,
GULF OIL CORPORATION,
Intervenors

No. 81-1691

TRANSCONTINENTAL GAS PIPE LINE CORPORATION,
Petitioner

v.

FEDERAL ENERGY REGULATORY COMMISSION,
Respondent

MOBIL OIL CORPORATION,
GENERAL AMERICAN OIL COMPANY OF TEXAS,
PHILLIPS PETROLEUM COMPANY,

PENNZOIL COMPANY,
SHELL OIL COMPANY,
ASSOCIATED GAS DISTRIBUTORS,
GETTY OIL COMPANY,
LOUISIANA LAND & EXPLORATION COMPANY,
TEXACO, INC.,
EXXON CORPORATION,
SUN OIL COMPANY,
TENNECO OIL COMPANY,
HOUSTON OIL AND MINERALS CORPORATION,
GULF OIL CORPORATION,
PLACID OIL COMPANY,
Intervenors

No. 81-1692

NATURAL GAS PIPELINE COMPANY OF AMERICA,
Petitioner

v.

FEDERAL ENERGY REGULATORY COMMISSION,
Respondent

MOBIL OIL CORPORATION, ET AL.,
GENERAL AMERICAN OIL COMPANY OF TEXAS,
PHILLIPS PETROLEUM COMPANY,
PENNZOIL COMPANY,
SHELL OIL COMPANY,
LACLEDE GAS COMPANY,
ASSOCIATED GAS DISTRIBUTORS,
GETTY OIL COMPANY,
LOUISIANA LAND & EXPLORATION COMPANY,
TEXACO, INC.,
SUN OIL COMPANY,
CHEVRON, USA,
EXXON CORPORATION,
TENNECO OIL COMPANY,
HOUSTON OIL AND MINERALS CORPORATION,
GULF OIL CORPORATION,
PLACID OIL COMPANY,
Intervenors

No. 81-1696

LONE STAR GAS COMPANY,
Petitioner

v.

FEDERAL ENERGY REGULATORY COMMISSION,
Respondent

GENERAL AMERICAN OIL COMPANY OF TEXAS,
PHILLIPS PETROLEUM COMPANY,
PENNZOIL COMPANY,
SHELL OIL COMPANY,
LACLEDE GAS COMPANY,
LOUISIANA LAND & EXPLORATION COMPANY,
GETTY OIL COMPANY,
ASSOCIATED GAS DISTRIBUTORS,
VALERO TRANSMISSION COMPANY,
TEXACO, INC.,
EXXON CORPORATION,
SUN OIL COMPANY,
TENNECO OIL COMPANY,
HOUSTON OIL AND MINERALS CORPORATION,
GULF OIL CORPORATION,
PLACID OIL COMPANY,
PANHANDLE EASTERN PIPE LINE CO., ET AL.,
Intervenors

No. 81-1802

LACLEDE GAS COMPANY,
Petitioner

v.

FEDERAL ENERGY REGULATORY COMMISSION,
Respondent

No. 82-1004

LONE STAR GAS COMPANY,
Petitioner

v.

FEDERAL ENERGY REGULATORY COMMISSION,
Respondent

EXXON CORPORATION,
CONOCO INC.,
GENERAL AMERICAN OIL COMPANY OF TEXAS,
PENNZOIL COMPANY,
TENNECO OIL COMPANY,
UNION OIL CO. OF CALIFORNIA,
GETTY OIL COMPANY,
AMINOIL USA, INC.,
GULF OIL CORPORATION,
TEXACO, INC.,
MOBIL OIL CORPORATION, ET AL.,
HOUSTON OIL AND MINERALS CORPORATION,
SHELL OIL COMPANY,
ATLANTIC RICHFIELD COMPANY,
SUN EXPLORATION AND PRODUCTION CO.,
Intervenors

No. 82-1177

ASSOCIATED GAS DISTRIBUTORS,
Petitioner

v.

FEDERAL ENERGY REGULATORY COMMISSION,
Respondent

Petition for Review of Orders of the
Federal Energy Regulatory Commission

Argued November 2, 1982

Decided August 9, 1983

John H. Cheatham, III, with whom *Judith M. Johnson* was on the brief for petitioner, Interstate Natural Gas Association of America.

Douglas G. Robinson, with whom *Erica A. Ward*, *Enid L. Veron* and *Michael K. Chapman*, were on the brief for petitioner, Lone Star Gas Company. *Rodney O. Thorson*, also entered an appearance for petitioner.

William W. Brackett, with whom *Daniel F. Collins* and *Terry O. Vogel*, Michigan Wisconsin Pipe Line Company, *Thomas F. Ryan, Jr.*, and *Richard T. Boone*, Transcontinental Gas Pipe Line Company, *Paul E. Goldstein*, *Harry L. Albrecht* and *Robert D. Rosenberg*, Natural Gas Pipeline Company of America, *Cleon L. Burt* and *John B. Rudolph*, Mississippi River Transmission Corporation, *Dean W. Wallace*, and *John B. Will*, Northern Natural Gas Company, were on the brief for petitioners, Michigan Wisconsin Pipe Line Company, et al.

Frederick Moring, was on the brief for petitioner, Associated Gas Distributors.

J. David Mann, Jr., was on the brief for petitioner, Laclede Gas Company.

Joel M. Cockrell, Attorney, Federal Energy Regulatory Commission, with whom *Charles A. Moore*, General Counsel, *Jerome M. Feit*, Solicitor, Federal Energy Regulatory Commission, and *George H. Williams, Jr.*, Attorney, Federal Energy Regulatory Commission, were on the brief, for respondent.

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William T. Benham, entered an appearance for intervenor, Amoco Production Company.

Albert D. Hoppe, entered an appearance for intervenor, Arco Oil and Gas Company.

Karol Lyn Newman, entered an appearance for intervenor, Laclede Gas Company.

Bernard A. Foster, III, entered an appearance for intervenor, Louisiana Land and Exploration Company.

George J. Meiburger, Frank X. Kelly and *John B. Will*, entered appearances for intervenor, Northern Natural Gas Company.

Raymond N. Shibley, Brian D. O'Neill and *L. Charles Landgraf*, entered appearances for intervenors, Panhandle Eastern Pipe Line Co., et al.

Christopher T. Boland and *J. Derrill Cody*, entered appearances for intervenor, Texas Gas Transmission Corporation.

William J. Grove, Jr., entered an appearance for intervenor, Valero Transmission Company.

Philip J. Mause, Norman A. Pedersen, Peggy Kobacker Shiffrin and *Steven M. Schur*, were on the brief for amicus curiae; The Public Service Commission of Wisconsin supporting reversal.

Before: ROBINSON, *Chief Judge*, MIKVA and SCALIA, *Circuit Judges*.

Opinion for the Court filed by *Circuit Judge* MIKVA.

MIKVA, *Circuit Judge*: The petitioners in this action, numerous natural gas transmission and distribution companies and their respective trade associations, seek review of a final rule of the Federal Energy Regulatory Commission (FERC or Commission). That rule establishes a new approach to measuring the energy content of natural gas for the wellhead pricing purposes of the Natural Gas Policy Act of 1978 (NGPA), 15 U.S.C. §§ 3311-3333 (Supp. V 1981). Specifically, the new rule requires that the energy content of natural gas be measured under the varying, relatively "dry" conditions at which gas is delivered for sale instead of the uniform, water-vapor saturated, "wet" condition under which the Commission had previously determined the energy content of gas. The petitioners argue that the new rule, by defining energy content in a way unforeseen by Congress, effectively

raises the wellhead prices of natural gas above the maximum ceiling prices established by Congress in the NGPA. Alternatively, the petitioners argue that the rule was adopted without adequate notice and comment under the Administrative Procedure Act; was impermissibly given retroactive effect; and failed to guarantee wholesale gas purchasers automatic pass through of any retroactive payments they may be forced to make. We agree that the rule violates the NGPA's statutory pricing scheme and accordingly vacate the Commission's rule.

I. BACKGROUND

A. *Technical and Historical Background of the "Wet" Rule*

The energy content of natural gas is measured in terms of British thermal units (Btu's), each Btu representing the amount of energy needed to raise the temperature of one pound of water one degree Fahrenheit, *see Texaco, Inc.*, 33 F.P.C. 1228, 1240 n.5 (1965). The Btu content of any given stream of natural gas will vary, however, depending on the gas' particular mix of combustible and noncombustible constituents. Natural gas is primarily composed of combustible hydrocarbons such as methane, propane, butane, ethane, and natural gasoline. Yet, natural gas contains small amounts of noncombustible substances as well. Of particular importance to the present case is the fact that natural gas often contains relatively small amounts of water vapor. *See* FERC Order 93-A, Technical Appendix, *reprinted in* Joint Appendix (JA) 59, 63, 73. Because water vapor contains no available heat energy, its presence in any given volume of natural gas will reduce the Btu content of the gas by displacing energy-producing hydrocarbons. *Id.* at 61.

Prior to the passage of the NGPA, the Commission (and its predecessor, the Federal Power Commission) measured the Btu content of natural gas for the purpose

of making "quality adjustments" to the gas rates set by the Commission under the Natural Gas Act of 1938 (NGA), 15 U.S.C. §§ 717a-717w (1976 & Supp. V 1981). Although the varying amounts of water vapor in natural gas streams could affect the gas streams' relative Btu values, the Commission sought to factor out this relatively small variable—to ensure ease of measurement and consistency among samples—by determining Btu content under laboratory conditions that standardized the amount of water vapor at a convenient, albeit arbitrary, level. *See* Government Brief at 5 n.9 & 8 n.12. Specifically, the Commission promulgated a rule requiring the Btu content of a gas stream to be determined on the basis of a test volume of gas (1.0 cubic foot), saturated with water vapor at a specified, conveniently obtained temperature and pressure (60° F. and 30 inches of mercury). *See* 18 C.F.R. §§ 2.56a(c)(1), 2.56b(d)(1) (1982) (post- and pre-1973 gas, respectively). This rule was known as the "wet" rule because it required the gas sample to be saturated with water vapor at a temperature and pressure combination where the capacity of natural gas to absorb water vapor is markedly higher than that existing at the temperature and pressure conditions under which most natural gas is sold. In practical effect, therefore, the wet rule tended to overstate water vapor content for gas which, when actually delivered, was neither saturated with water vapor nor delivered at the "standard" temperature or pressure. *See* FERC Order 93-A, Technical Appendix, *reprinted in* JA 63. This overstated water vapor content, in turn, caused an understatement in the number of Btu's assumed to be in the test sample of natural gas.

Despite its relative inaccuracy, however, the Commission's "wet" Btu determination enjoyed the advantages of widespread industry acceptance and consistent agency implementation. Originally proposed in a policy statement during the Commission's administration of gas rates under the Natural Gas Act, *see* Fed. Reg. 4,614 (1961),

the wet rule was expressly sanctioned by the Commission in *Texaco, Inc.*, 33 F.P.C. 1228 (1965), in which the Commission noted that the rule was accepted by the American Society for Testing Materials and the natural gas industry as a whole, *id.* at 1236-37. *See also Sunray DX Oil Co.*, 29 F.P.C. 1079 (1963). The wet rule was carried forward into the Commission's area rate proceedings under the NGA, *see Area Rate Proceeding (Southern Louisiana Area)*, 46 F.P.C. 86, 143-44 (1973); *Area Rate Proceeding, Docket No. AR61-1*, 34 F.P.C. 159, 223-24 (1965), and into its national rate proceedings under the NGA as well, *see National Rates for Jurisdictional Sales of Natural Gas*, 56 F.P.C. 2698 (1976); *Just and Reasonable National Rates for Sales of Natural Gas*, 54 F.P.C. 3090 (1975); *Just and Reasonable National Rates for Sales of Natural Gas*, 52 F.P.C. 1604, 1630, 1651-52 (1974). Indeed, in its first national rate proceeding, the Commission specifically rejected an argument by natural gas producers that, because gas generally is sold to pipelines and distribution companies in a much "drier" condition than that defined in the wet rule, the Commission should adopt a more accurate "as delivered" or "dry" definition of Btu content:

> The Producers argue that the heating content (Btu) 'of the gas should be adjusted for the water vapor content in the gas as it is delivered.' In *Texaco, Inc.*, the Commission determined that Btu adjustments should be made on the saturated basis. This is the basis which was utilized in the area rate proceedings, and is the basis that will be adopted in this proceeding.

52 F.P.C. at 1630.

Thus, at the time Congress passed the NGPA in 1978, the Btu content of natural gas had been defined by the Commission in terms of a standardized, saturated condition for over fifteen years. As codified in the Commission's rules of practice, the wet rule provided:

> The Btu content of the natural gas used in computing this rate adjustment [under the NGA] shall be the number of British thermal units (Btu) produced by the combustion, at constant pressure, of the amount of the gas which would occupy a volume of 1.0 cubic foot at a temperature of 60° F. *saturated with water vapor* and under a pressure equivalent to that of 30.00 inches of mercury at 32° F. and under standard gravitational force (980.665 centimeters per second squared) with air of the same temperature of the gas and air and when the water formed by combustion is condensed to the liquid state.

18 C.F.R. §§ 2.56a(c)(1), 2.56b(d)(1) (1982) (emphasis added). The precise language of the wet rule becomes an important reference point for the petitioners' procedural objections to the Commission's post-NGPA change of course.

B. *The Procedural History of the "Dry" Rule*

Title I of the NGPA establishes a detailed scheme of maximum ceiling prices for various categories of natural gas sold to pipelines and local distribution companies. Although these maximum "wellhead," or "first sale," prices vary among different categories, the NGPA expresses the price of each category on a "per million Btu" (per MMBtu) basis. Thus, for example, section 108 of the Act sets a maximum lawful price for "stripper well" gas at $2.09 per MMBtu as of May 1978 (subject to small, monthly adjustments thereafter for inflation and real growth) and section 109 of the Act sets a maximum price for certain gas produced from Prudhoe Bay, Alaska at $1.45 per MMBtu as of April 1977 (as adjusted monthly, thereafter, for inflation). *See* 15 U.S.C. §§ 3318, 3319 (Supp. V 1981). Because the prices for all of the

NGPA's categories of gas are expressed per MMBtu, the Commission felt it necessary to specify, in its regulations, how Btu content was to be determined. In doing so, the Commission abandoned the "wet" measurement of Btu's that it had used under the NGA (and indeed still uses for NGA purposes not displaced by the NGPA). In its place, the Commission adopted an "as delivered" rule that measured the Btu content of gas at the conditions under which natural gas is actually delivered for first sales. Because natural gas generally contains far less water vapor under actual delivery conditions than under the saturated, laboratory conditions specified in the wet rule, we refer to the Commission's new rule as the "dry" rule.

The Commission's transition from the wet to the dry rule was heralded by considerable confusion. The NGPA's pricing scheme became law on November 9, 1978, with an effective date of December 1, 1978. Because of the shortness of time in which to devise implementing regulations, FERC decided to promulgate interim regulations on an expedited basis and to revise them, if needed, at a later date. Accordingly, the Commission issued a notice of proposed rulemaking on November 14, 1978; considered all comments received by November 20; and issued its interim regulations on November 29. *See* Notice of Proposed Rulemaking in Docket No. RM79-3, 43 Fed. Reg. 53,270 (1978). The notice also provided for a subsequent, sixty-day comment period on the interim regulations, to form the basis for any appropriate revisions. *Id.*

Among the proposed regulations considered during this expedited interim rulemaking was the Commission's dry rule, designated as section 270.204 of the proposed interim regulations. As originally proposed, however, the Commission's dry rule appeared virtually identical to its long-established wet rule. Proposed section 270.204 provided:

Btu content per unit volume of natural gas

For purposes of determining the number of Btu's per unit volume of natural gas, the Btu content of one cubic foot of natural gas is the number of Btu's produced by the combustion, at constant pressure, of the amount of gas which would occupy a volume of 1.0 cubic foot at a temperature of 60 degrees Fahrenheit, *saturated with water vapor*, and under a pressure equivalent to that of 30.00 inches of mercury at 32 degrees Fahrenheit, and under standard gravitational force (980.665 centimeters per second squared) with air of the same temperature and pressure as the gas, when the products of combustion are cooled to the initial temperature of the gas and air and when the water formed by combustion is condensed to the liquid state.

43 Fed. Reg. at 53,333 (1978) (emphasis added); *compare* 18 C.F.R. § 2.56a(c)(1) (quoted *supra* page 11). Nothing in the prefatory statement accompanying the Commission's proposed regulation gave any indication that section 270.204 constituted a change from the virtually identical text of the Commission's wet rule. The Commission's only explanation of section 270.204 was that it "presents the technical information necessary to determine the number of British thermal units (Btu's) per unit volume of natural gas. This is necessary because maximum lawful prices for first sales of natural gas are stated in terms of dollars per million Btu's." 43 Fed. Reg. at 53,280. No comments were received on the proposed rule during the one-week comment period and, on November 29, 1978, the identical text of the proposed rule was issued as interim regulation 270.204. *See* 43 Fed. Reg. at 56,448.

The subsequent sixty-day comment period on the interim regulation was more lively. During this period, the gas-producing companies which are intervenors in the present case filed written comments objecting to what

they perceived to be the water-vapor saturation requirements of interim regulation 270.204:

> Section 270.204—According to this section, the Btu content of natural gas is to be determined "saturated with water vapor." The result of this "special rule" may be to unlawfully deny producers the right to collect the full statutory rates under the NGPA. By fixing the price on an MMBtu basis, Congress intended that the maximum lawful price should be paid for the gas as delivered by the producer, not as adjusted by regulation.

Joint Supplemental Comments of Indicated Producers, filed Jan. 31, 1978, at 6-7, *reprinted in* Brief of Producer Intervenors, Appendix A at A-1 to A-2. On the basis of comments such as these, the producers filed a petition for rehearing concerning the interim regulations with the Commission in February 1979. *See* Application of Indicated Producers for Rehearing, FERC Docket No. RM79-3, filed Feb. 2, 1979. On April 19, 1979, however, the Commission denied this application without comment. *See* Order Granting in Part and Denying in Part Applications for Rehearing of the Interim Regulations, *reprinted in* Brief of Producer Intervenors, Appendix A at A-5 to A-9. Thereafter, the producers filed for judicial review of interim regulation 270.204 in the United States Court of Appeals for the Fifth Circuit. *See Ecee, Inc. v.* FERC, 645 F.2d 339 (5th Cir. 1981).

On July 16, 1980, almost eighteen months after promulgating interim section 270.204, FERC issued Order 93, adopting the interim regulation as a final regulation, albeit parsing the final text of the regulation into a slightly different format:

> ***Interim regulation § 270.204 is adopted as a final rule***
>
> **§ 270.204 *Btu content per cubic foot of natural gas***
>
> **(a) *Measurement.* The Btu content of one cubic foot of natural gas under the standard conditions**

> specified in paragraph (b) of this section is the number of Btu's produced by the complete combustion of such cubic foot of gas, at constant pressure with air of the same temperature and pressure as the gas, when the products of combustion are cooled to the initial temperature of the gas and air and when the water formed by such combustion is condensed to a liquid state.
>
> (b) *Standard conditions.* The standard conditions for purposes of paragraph (a) of this section are as follows: The gas *is saturated with water vapor* at 60 degrees Fahrenheit under a pressure equivalent to that of 30.00 inches of mercury at 32 degrees Fahrenheit, under standard gravitational force (980.665 centimeters per second squared).

FERC Order No. 93, Final Rule, July 16, 1980, *reprinted in* JA 24 (emphasis added). Although the terms of the final rule tracked, almost verbatim, the terms of the interim rule, the Commission surprised all of the parties in this case by announcing in the "Summary" section of Order 93 that the Btu values obtained under section 270.204 were to be "converted" to figures that reflected the actual water vapor condition of natural gas on delivery:

> Several comments noted that § 270.204 provides that Btu content must be measured on a "saturated with water vapor" basis rather than on the basis of the actual water vapor content of the gas as delivered. The comments asserted that under this rule the seller would be paid for less Btu's than would actually be delivered if the gas were sold on a dry (unsaturated) basis.
>
> This assertion is erroneous. Section 270.204 merely describes the test standard for expressing the number of Btu's contained in a cubic foot under certain conditions. Under this standard, the heat value is

> expressed as the number of Btu's per cubic foot of gas "saturated with water vapor." The Commission is aware that the water vapor content or pressure of the gas when tested may be different than described in this standard, and may also be different than the conditions that obtain when the gas is delivered. Therefore, the results obtained under test conditions, be they those in the rule or otherwise, *must be converted to figures that reflect the actual condition of the gas on delivery in order to properly price the gas.*

FERC Order 93, *supra*, at JA 15-16 (emphasis added).

Although Order 93 rendered moot the "wet rule" issue in the producers' petition for review in the Fifth Circuit's *Ecee* case, it set off a flurry of applications for rehearing by most of the pipeline and gas distribution companies which are presently petitioners in this case. The Commission denied all of these applications for rehearing in Order 93-A, April 24, 1981, *reprinted in* JA 30. In Order 93-A, the Commission for the first time articulated the rationale behind Order 93's controversial explanation of section 270.204. Essentially, the Commission's position was that the NGPA's Btu-based pricing scheme required (1) a more accurate method of measuring Btu's than was required under the old NGA scheme, and (2) a method of measuring Btu's in a volume of gas at "delivery conditions" instead of at "standard conditions." *See* Order 93-A, *supra*, at JA 42-49. To explain why the language of section 270.204 specified these "standard conditions" in the first place, the Commission cryptically stated:

> [Section 270.204] merely describes the standard conditions under which the number of MMBtu's in a volume of natural gas is measured. However, recognizing that actual delivery conditions vary widely and are most often different from the defined standard conditions . . . the results of Btu measurements at the defined standard conditions must be adjusted to account for actual delivery conditions.

Order No. 93-A, *supra*, at JA 32-33. The Commission further stated that its newly explained "as delivered" method of determining Btu content could be made by any reasonable method. JA 55. Moreover, the Commission concluded, because Order 93 had merely "clarified" interim section 270.204, and had not substantively changed it, the effective date of the final dry rule was December 1, 1978 (the effective date of the interim rule) and not September 22, 1980 (the effective date of Order 93). *See* JA 57. Because the December 1, 1978 effective date could result in retroactive payments in the millions of dollars from pipeline and gas distribution companies to gas producers, the Commission specifically provided that pipeline and distribution companies could demonstrate that pass through charges to their customers (rate treatment) would be "appropriate" for any claimed retroactive payments. *See* JA 58.

In response, some pipeline and distribution companies petitioned the Commission for rehearing of Order 93-A and requested a stay of its retroactive application. These petitions were denied on July 30, 1981. *See* Order Denying Applications for Rehearing of Order 93-A and Limited Stay of Order Nos. 93 and 93-A, *reprinted in* JA 89. In June and July 1981, the petitioners filed their petitions for judicial review in this court and, on August 6, 1981, one of the petitioners (Lone Star Gas Company) moved this court for a stay of the dry rule's retroactive application pending a judicial determination on the merits. Before this court could rule on the motion, the Commission *sua sponte* asked for a remand of the record to reconsider the issue of the dry rule's effective date and temporarily stayed the rule's retroactive application pending the Commission's reconsideration. This court allowed remand of the record to the Commission in September 1981, but in December of that same year, the Commission issued an Order reaffirming the dry rule's December 1, 1978 effective date. *See* Order Vacating Partial Stay

and Amending Regulations, JA 126. In this Order, however, the Commission amended the language of section 270.204 by adding a new subsection (c):

> (c) *Application of the maximum lawful price.* The maximum lawful price prescribed by the NGPA and this part for any first sale of natural gas applies to the Btu's actually delivered in that first sale.

JA 133. Because the Commission considered this amendment to be merely another "clarification" of the regulation, it concluded that public notice and comment were unnecessary. JA 131.

C. *The Parties' Arguments*

The primary arguments in this case address two broad questions: (1) whether the NGPA's pricing scheme allows or requires the Commission to promulgate a dry definition of Btu content; and (2) if so, whether the Commission's promulgation of section 270.204 afforded the petitioners adequate notice and opportunity to comment. The petitioners maintain that the NGPA does not allow the Commission to adopt a dry definition of Btu content. They support this position with excerpts from the Act's legislative history suggesting indirect congressional endorsement of the wet rule; supplementally, they point to the absence of congressional criticism of the wet rule as indicating congressional intent to leave the definition of Btu content as it was. In the alternative, the petitioners argue that they were deprived of a meaningful opportunity to comment on the dry rule because the Commission's notice of proposed rulemaking and the "wet" text of interim section 270.204 failed to indicate to the public that a dry rule was even under consideration. Finally, the petitioners complain that the Commission violated their constitutional right to due process by giving retroactive effect to the dry rule—which was announced, at the earliest, in Order 93 on July 16, 1980—as of the NGPA's effective date, December 1, 1978. This retroac-

tive application is compounded, the petitioners add, by FERC's refusal to guarantee pipelines and distribution companies automatic pass through to their customers, under section 601 of the NGPA, 15 U.S.C. § 3431 (Supp. V 1981), of any retroactive "dry Btu" payments that the companies may now be forced to make to natural gas producers.

In response, the Commission posits that its dry definition of Btu content is consistent with the NGPA's pricing scheme and deserves judicial deference. Specifically, the Commission argues that Congress impliedly displaced the inaccurate wet rule by choosing a Btu-based pricing scheme; such a scheme, the Commission concludes, evidences congressional intent to measure Btu's on a more accurate "dry" or "as delivered" basis. Moreover, because its dry rule merely articulates this implicit legislative intent, the Commission maintains that the rule is an "interpretative" rule, outside of the notice and comment requirements of the Administrative Procedure Act (APA), 5 U.S.C. § 553(b)(c) (1976). Concomitantly, the Commission maintains that its interpretative rule should be given the same December 1, 1978 effective date as the statute that it interprets. In the alternative, the Commission suggests that its notice of proposed rulemaking and the text of its interim rule sufficed to notify petitioners adequately that the subject of Btu measurement was under agency review. Assuming that its dry rule was a properly promulgated but non-interpretative rule, the Commission would still justify the rule's application as of December 1, 1978 because the harm of depriving natural gas producers of their congressionally-allowable prices is claimed to be greater than the harm to pipeline and distribution companies, which assertedly can pass through any legitimate, retroactive payments to their customers. The Commission insists that its refusal to "guarantee" pass through is not meant to deprive the pipelines and distribution companies of pass through under section 601. Rather, the Commission's refusal is said merely to

allow pass through on a case-by-case basis, to ensure that all passed through charges are not "excessive due to fraud, abuse or similar grounds," as provided in section 601(c)(2), 15 U.S.C. § 3431(c)(2) (Supp. V 1981).

The intervenors in this case are twenty-three energy-producing companies. The intervenors take the position that the Commission's dry rule is required by the NGPA; that it is an interpretative rule outside of the APA's notice and comment provisions; and, alternatively, that it is a reasonable legislative rule, promulgated with adequate notice and comment. In addition, the intervenors have moved to dismiss one of the petitioners, Lone Star Gas Company (Lone Star), for lack of jurisdiction. Specifically, the intervenors claim that Lone Star's failure to petition the Commission for rehearing of the final day rule within 30 days of the rule's promulgation in Order 93 precludes it from seeking judicial review of that Order given the jurisdictional prerequisite established in section 506 of the NGPA, 15 U.S.C. § 3416(a)(2) (Supp. V 1981) (denying standing to seek judicial review to any person aggrieved by an order of the Commission who failed to petition for agency rehearing within 30 days after issuance).

II. Discussion

As a threshold matter, we consider the petitioners' contention that the language and legislative history of the NGPA do not allow the Commission to adopt a "dry" definition of Btu content. Should the petitioners prevail in this contention, it would not be necessary to reach the notice and comment, retroactivity, or pass through issues. In evaluating the petitioners' position, and concomitantly the Commission's (and producer-intervenors') contrary view of the statute, it is our responsibility to measure the parties' arguments in light of the language, legislative history, purpose, and structure of the NGPA, according the Commission the traditional respect due an agency's interpretation of the statute it is called upon to enforce.

We begin our analysis by considering the statute's language; "[t]he starting point in every case involving construction of a statute is the language itself." *International Brotherhood of Teamsters v. Daniel*, 439 U.S. 551, 558 (1979). In the present case, however, the dearth of statutory references to water vapor/Btu content calls forth Justice Frankfurter's guidance: "One more caution is relevant when one is admonished to listen attentively to what a statute says. One must also listen attentively to what it does not say." Frankfurter, *Some Reflections on the Reading Statutes*, 47 COLUM. L. REV. 527, 536 (1947). The NGPA does not expressly provide for either a wet or a dry determination of Btu content. Although ceiling prices for virtually every category of natural gas are set on a "per MMBtu" basis, *see* 15 U.S.C. §§ 3312-3319 (Supp. V 1981), the statute merely defines the term "Btu" to mean "British thermal units," 15 U.S.C. § 3301 (30).

Undaunted by the lack of statutory text, some of the parties seek to quarry congressional intent from Congress' silence. The petitioners, for example, argue that Congress, having not spoken to the Btu measurement issue, "cannot be held to have required a change in the long-standing practice of measuring Btu content on a saturated basis." *See, e.g.*, Brief of Petitioners Michigan Wisconsin Pipe Line Company, et al (Michigan Wisconsin Brief) at 24. In response, the producer-intervenors insist, "[h]ad Congress intended to preserve the imprecise water saturation assumption . . . it could easily have done so in [the definitional section] of the NGPA." Brief of Producer Intervenors at 14. These thrusts and parries, however, reflect a duel of wooden maxims that has little discernible relationship to the meaning of the NGPA. However, revealing congressional acquiescence in administrative action may be in more pointed, focused contexts, *see, e.g., Bob Jones University v. United States*, 51 U.S.L.W. 4593 (U.S. May 24, 1983), there are no

indications in the NGPA's legislative history to suggest that Congress' failure to define expressly Btu content indicates, by itself, a conscious policy preference for either the wet or the dry rule. The wisdom of Justice Frankfurter's admonition to consider what a statute fails to say should not be taken as a cue for sloganeering; generally, the use of canons of construction are appropriate when they aid, rather than displace, the search for statutory meaning. *Cf.* Note, *Intent, Clear Statements, and the Common Law: Statutory Interpretation in the Supreme Court*, 95 HARV. L. REV. 892, 903 (1982) (rules of construction should not blindly substitute for appropriate inquiry into statutory purpose).

Both the Commission and intervenors suggest that the "as delivered" rule is required by the NGPA's repeated reference to "natural gas *delivered* during any month." *See* 15 U.S.C. §§ 3312(a), 3313(a), 3314(a), 3315(a), 3316(a), 3317(a), 3318(a), 3319(a) (Supp. V 1981) (emphasis added). We find this reading to be without foundation. Nothing in the NGPA's language or legislative history links the phrase, "delivered during any month," to a particular type of Btu measurement. Rather, the statute focuses on the month of "delivery," as opposed to the date of the sale or the date of the natural gas contract, to determine the proper month for applying the appropriate ceiling price and accompanying monthly inflation and growth adjustments. *See* 15 U.S.C. § 3311(b)(4) (Supp. V 1981) ("The maximum lawful ceiling prices under this subchapter . . . (B) shall apply to the month of delivery without regard to the date of the sale or the date of the contract under which the sale occurs . . . ."). Thus, for example, section 3312 provides that the maximum lawful price of new gas "*delivered during any month*" shall be:

> (1) $1.75 per million Btu's, *in the case of April 1977*; and

(2) *in the case of any month thereafter*, the maximum lawful price, per million Btu's, prescribed under this subsection for the preceding month multiplied by the monthly equivalent of a factor equal to the sum of—

(A) the annual inflation adjustment factor *applicable for such month*; plus

(B) (i) .035, *in the case of any month beginning before April 20, 1981*; or

(ii) .04, *in the case of any month beginning after April 20, 1981.*

15 U.S.C. § 3312(a)(b) (Supp. V 1981) (emphasis added). The very particularity with which Congress identifies the price adjustments attending the month of delivery (to the thousandth's place, in some instances) makes it extremely unlikely that Congress would use the phrase, "delivered during any month," without further specification, to denote obliquely a change from the wet to the dry method of measuring Btu's—a change which, we are told, may affect the overall amounts paid for natural gas by the hundreds of millions of dollars. In short, the Commission fails to convince us of any necessary connection between the delivery point at which the price of gas is fixed and a "dry" determination of Btu content. Indeed, the Commission itself has established that a "wet" measurement of Btu content was properly used during rate determinations under the NGA, despite the fact that the underlying NGA commodity unit was also measured on an "as delivered" basis. *See* Order 93-A at 13, *reprinted in* JA 42. ("Although the commodity priced was volume rather than heating value, the NGA, too, priced the commodity on an as-delivered basis.").

The Commission's argument thus boils down to the shift from the commodity unit under NGA ratemaking

where gas was priced by volume, per thousand cubic feet (Mcf), to the new energy-content basis under the NGPA, per MMBtu. In the Commission's view, the NGPA's use of a Btu-based pricing scheme puts a premium on accurate Btu measurement that cannot be squared with the water-vapor assumptions of the Commission's longstanding wet rule. This is alleged to be so for two reasons. First, the Commission suggests, "Title I of the NGPA meticulously establishes a detailed pricing scheme for enumerated categories of natural gas," under which Congress could not have intended "to adopt a method of price calculation that leads to inaccurate results." Brief for Respondent FERC at 19, 20. Second, FERC adds, inaccurate measurement of the Btu content of natural gas would distort the intent of the NGPA to set ceiling prices for natural gas in reference to the Btu content of other fuels. *See id.* at 21 n.22. Neither of these two arguments withstands scrutiny.

There is no question but that the pricing scheme of the NGPA reflects the meticulous detail to which the Commission refers. But it is precisely the detail of this scheme that undermines the Commission's position. Originally introduced as the keystone of President Carter's National Energy Act, the NGPA emerged as a complex compromise between two radically different House- and Senate-passed bills. *Compare* H.R. 6831, 95th Cong., 1st Sess., 123 Cong. Rec. 13,184 (1977) (original bill in House) *and* S. 1469, 95th Cong., 1st Sess., 12 Cong. Rec. 13,730 (1977) (original bill in Senate) *with* H.R. 8444, 95th Cong., 1st Sess. (1977) (House-passed bill mandating permanent price controls on intra- and interstate sales) *and* S. 2104, 95th Cong., 1st Sess. (1977) (Senate-passed bill exempting intrastate sales from regulation and deregulating new onshore and offshore gas within two and five years, respectively). *See generally* Note, *Legislative History of the Natural Gas Policy Act: Title I*, 59 TEX. L. REV. 101, 106-16 (1980). The com-

promise bill combines price control and deregulation in a statutory scheme that creates nationwide incentive-based price ceilings for categories of gas at the margin of supply (such as "new," "high-cost," and "stripper well" gas); that retains various "just and reasonable" rates as the basis for price ceilings on "old" gas; and that imposes interim price controls on intrastate gas. Although the NGPA provides for phased deregulation of many of these categories of gas, Congress established the Act's interim, as well as permanent, price ceilings to the penny. The maximum lawful prices of various categories of gas are congressionally fixed in either specified dollar amounts or else in terms of their "just and reasonable" rates as of a date certain under the NGA. *Compare* 15 U.S.C. §§ 3312, 3313, 3317, 3318 (Supp. V 1981) (setting specific dollar amounts) *with id.* §§ 3314, 3316(a) (incorporating NGA "just and reasonable" rates). *See Public Service Commission of New York v. Mid-Louisiana Gas Company* (*Mid-Louisiana Gas*), 51 U.S.L.W. 5030, 5034 (U.S. June 28, 1983) ("Title I . . . establishes an exhaustive categorization of natural gas production and sets forth a methodology for calculating an appropriate ceiling price within each category"). Given that both the Commission and the producer-intervenors agree that the Btu content of natural gas is an integral part of each of the prices established in the NGPA, *see* Brief for Respondent FERC at 22 ("It cannot be denied . . . that the new statute expressly provides that heat content of natural gas determines its price"); Brief of Producer Intervenors at 16 (acknowledging that different methods of measuring Btu's can effectively raise or lower the NGPA's ceiling prices), it is most logical, for several reasons, to assume that Congress fixed these prices based on the "wet" method of measuring Btu's.

First, the wet rule establishes the only method of measuring Btu's with which Congress was likely to have been familiar. At the time Congress passed the NGPA,

the Btu content of natural gas had been defined by the Commission in terms of a standardized, saturated condition for over fifteen years. *See* discussion *supra* pp. 10-11. Moreover, the wet rule was the only method of measuring Btu's that was even tangentially acknowledged in the NGPA's legislative history. In the House committee report accompanying H.R. 8444, one of the NGPA's forerunner bills, the House Committee on Interstate and Foreign Commerce explained the bill's incorporation of "the just and reasonable price established by the Commission" by stating that "[t]he reference to . . . just and reasonable prices and contract prices for purposes of determining maximum lawful prices under section 405 *incorporates Btu adjustments and other quality adjustments provided for in FPC rate determinations* or in the applicable contract." H.R. REP. NO. 496, Part 4, 95th Cong., 1st Sess. 103 (1977) (emphasis added). Although the final version of the NGPA differed in many respects from H.R. 8444, the concept of incorporating the Commission's "just and reasonable" rates for certain categories of gas was carried over into the final version of the Act, *see, e.g.*, 15 U.S.C. §§ 3314, 3316(a) (Supp. V 1981). In explaining this incorporation, the House conference report referred to "the just and reasonable rates that were in effect on April 20, 1977 *as converted, if necessary, to a million Btu basis.* . . ." H.R. REP. NO. 1752, 95th Cong., 2d Sess. 82 (1978), *reprinted in* 1978 U.S. CODE CONG. & AD. NEWS 8983, 8998 (emphasis added). We read the qualifier, "as converted, if necessary, to a million Btu basis," to assume that it would not be necessary to convert those contract prices established under the NGA that may already have been expressed on a "per million Btu" basis. *See, e.g., id.* at 85, *reprinted in* 1978 U.S. CODE CONG. & AD. NEWS at 9001 (referring to the NGA as setting the "just and reasonable" price of gas under interstate rollover contracts at *55¢/MMBtu's* for the second half of 1978.") (emphasis added). Given that such prices would have had to

comport with the NGA's longstanding wet rule, the report of the conference committee, like that of the committee report accompanying H.R. 8444, indicates at least indirect congressional incorporation of the wet rule into the NGPA's price structure. In contrast to this evidence of congressional familiarity with the pre-NGPA method of measuring Btu's, there is absolutely no evidence of congressional awareness of any alternative "dry" or "as delivered" methods. Under a statutory scheme in which Congress establishes definite prices for various categories of gas, and in which price adjustments for inflation and real growth are often expressed to the *thousandth's* place (*see supra* p. 23), the Commission's attribution to Congress of a price component with which it was wholly unfamiliar is unreasonable.

We reject the Commission's dry rule for a second reason: it severely overstates the significance of Congress' shift to the MMBtu basis of pricing natural gas and accordingly distorts the ceiling prices that Congress intended to establish. Throughout its Order explaining the statutory rationale for the dry rule, the Commission repeatedly emphasizes that, by choosing the "MMBtu" commodity unit in the NGPA, Congress necessarily rejected the NGA's use of the "Mcf" commodity unit and all that went with it—including the "wet method" of measuring Btu's for the purpose of making Btu quality adjustments in the price. *See, e.g.*, Order No. 93-A, *supra*, 32-33, 45-48. Such a sweeping conclusion is belied, however, by the NGPA's legislative history. Specifically, there is considerable evidence that Congress may have assumed the "Mcf" and "MMBtu" commodity units to be, in many respects, equivalent. We note, for example, that the ceiling price for "new" gas established in section 102 of the NGPA, $1.75 per MMBtu, tracks President Carter's originally submitted bill, which proposed that the price for "new" gas be set at $1.75 per Mcf. *Compare* 15 U.S.C. § 3312 (Supp. V 1981) *with White House Fact*

Sheet 16 (April 20, 1977), *reprinted in* I LEGISLATIVE HISTORY OF THE NATIONAL ENERGY ACTS OF 1978, Item 1 at 16 (1979). Similarly, the $0.54 per MMBtu price of interstate rollover gas established in 15 U.S.C. § 3316(a)(2)(A) (Supp. V 1981) appears to track exactly the $0.54 per Mcf price, for the same type and age of gas, derived from *Just and Reasonable National Rates for Sales of Natural Gas*, 52 F.P.C. 1604 (1974). And two of the NGPA's floor managers, Senator Jackson and Representative Dingell, both indicated their belief that the $1.45 per MMBtu price of section 109(b) derived directly from the $1.45 per Mcf price of identical gas established under the Commission's Opinion 770-A, *National Rates for Jurisdictional Sales of Natural Gas*, 56 F.P.C. 2698 (1976). *See* 124 Cong. Rec. H13,117 (daily ed. Oct. 14, 1978) (statement of Representative Dingell); 124 Cong. Rec. S15,020-21 (daily ed. Sept. 13, 1978) (statement of Senator Jackson). From this legislative history, we abstract only the likelihood that Congress may well have assumed that the "Mcf" and "MMBtu" bases of natural gas pricing were far more interchangeable than the Commission realized in its abandonment of the wet rule. Accordingly, we cannot accept the Commission's position that the NGPA's use of an "MMBtu" price represents so drastic a shift that all aspects of "Mcf" prices—such as the wet rule—were necessarily rejected. Such a position derives from assumptions at odds with those used by Congress in establishing the precise ceiling prices at issue in the case. *Cf. Mid-Louisiana Gas*, 51 U.S.L.W. at 5034 n.12 (although NGPA generally meant to displace Commission's regulatory *authority* under NGA, "[f]or some (but not all) old gas, the NGA price is preserved as an initial ceiling price"). Moreover, the Commission's position is difficult to reconcile with those sections of the NGPA authorizing the Commission to prescribe higher ceiling prices, in limited circumstances, provided that the new prices are "just and reasonable within the meaning of the Natural Gas Act." *See, e.g.*, 15 U.S.C. §§ 3314

(2), 3316(c), 3319(b) (Supp. V 1981). Given that the wet rule continues to govern the Commission's practice under the NGA, it would appear that only a "wet" method of measuring Btu's would satisfy both the NGPA's authorization to set higher just and reasonable rates "within the meaning of the NGA" and its requirement that all gas be priced on an MMBtu basis.

Our concern with the assumptions underlying the NGPA's pricing scheme provides the basis for a third criticism of the Commission's "dry" interpretation of the Act. Specifically, the Commission argues that Congress chose MMBtu's as its commodity unit in order to reference the price of natural gas to the "Btu equivalency" of other fuels. A "wet" method of measuring Btu's would unjustifiably skew this inter-fuel comparison, the Commission concludes, by distorting the Btu measurement of natural gas with artificial assumptions about water vapor content that do not, in fact, exist. *See* Order No. 93-A, *supra*, JA 45-46. The Commission's conclusion suffers from two major weaknesses. First, the final version of the NGPA failed to carry over the provisions of the House- and Senate-passed predecessor bills which adjusted the wellhead price for natural gas in light of the "current Btu-related price" of domestic crude oil. *Compare* 15 U.S.C. §§ 3311-3333 (Supp. V 1981) (final version of Title I) *with* H.R. 8444, 95th Cong., 1st Sess. § 403 (1977) *and* S. 2104, 95th Cong., 1st Sess. § 303 (1977) ("current Btu-related price" sections of NGPA's unenacted, predecessor bills). Given that the direct comparison between gas and oil Btu's was dropped from the final version of the statute, the Commission's emphasis on accurate inter-fuel comparisons loses much of its force. Second, moreover, the Commission's emphasis on hyper-accurate measurements finds little support from those inter-fuel Btu comparisons made in other statutory provisions enacted contemporaneously with Title I of the NGPA. Thus, for example, the committee report accom-

panying the Energy Tax Act of 1978, Pub. L. No. 95-618, 92 Stat. 3174-3205 (1978), refers to several "standard" assumptions made in determining the Btu equivalency of oil and gas for tax purposes: "To arrive at a Btu equivalency price for each million BTU's of natural gas, the price per barrel is divided by 5.8 million. (A thousand cubic feet of natural gas equals about 1 million BTUs)." H.R. REP. No. 496, Part III, 95th Cong., 1st Sess. 97 (1977). The apparent willingness of Congress to use a standard conversion factor of 5.8 million Btu's per barrel, as well as its generalization that one thousand cubic feet of gas (1 Mcf) contains approximately one million Btu's (1 MMBtu), suggests that Congress was not necessarily adverse to the use of "standard" assumptions underlying the wet rule. Indeed, the Commission itself has endorsed the use of standard assumptions in its implementation of section 204(e) of Title II of the NGPA, 15 U.S.C. § 3344(e) (Supp. V 1981). Section 204(e) requires that the Commission determine the cost of alternative fuel (specifically, of Number 2 fuel oil) on an MMBtu basis. Yet, in its implementing regulations, the Commission adopted a standard conversion factor of 5.8 million Btu's per barrel of Number 2 fuel oil, and specifically *rejected* the suggestions of various commenters that the Commission adopt a specific adjustment factor to accommodate variations in the Btu content among different barrels of oil. *See* 44 Fed. Reg. 57,754, 57,770 (1979). To the extent that Congress' use of Btu's may be given effect by the use of various "standard" measurements in Title II of the NGPA and in the Energy Tax Act of 1978, there does not seem to be any necessary incompatibility between Congress' shift to MMBtu's in Title I of the NGPA and its use of the "standard" assumptions underlying the wet rule.

In sum, we find the Commission's dry rule to be inconsistent with the NGPA's language, structure, and legislative history. Although one of the purposes of the Act

was to increase the financial incentives for producing various types of new gas, *see* Note, *Legislative History of the Natural Gas Policy Act*, *supra*, p. 25, at 116, Congress did not intend for the Commission to raise the effective wellhead price of gas as much as possible. Rather, Congress itself specified the maximum lawful prices of most categories of gas and authorized the Commission to raise those prices only in certain, very limited, circumstances. *Cf. Pennzoil Co. v. FERC*, 645 F.2d 360, 379 (5th Cir. 1981), *cert. denied*, 454 U.S. 1142 (1982) ("The balance Congress struck already took into account the conflicting interests of producers and consumers"). Given that the definition of Btu content is an integral part of the price structure chosen by Congress, *see supra* p. 26, the critical focus in this case involves the likely assumptions made by Congress in pricing natural gas on a "per MMBtu" basis. Thus, however more appealing the dry rule may be to the Commission's sense of scientific aesthetics and accuracy, it is not for the Commission to "improve" the statutory design chosen by Congress. The Commission's technical experience with measuring Btu's is of limited usefulness in determining what Congress meant in setting ceiling prices for natural gas on a Btu basis. Unlike those situations in which Congress delegates to an agency the choice of methodologies or definitions, *see, e.g.*, 29 U.S.C. § 880(b) (Supp. V 1981) (directing the Secretary of Labor "to develop reliable methods . . . to produce more statistically accurate data on unemployment"), the Commission itself concedes that it was given "no independent authority under the NGPA to define 'Btu,'" Brief for Respondent FERC at 28 n.28. Even according the Commission's rationale for the dry rule the respect traditionally due an agency's statutory interpretation, *see, e.g.*, *FEC v. Democratic Senatorial Campaign Comm.*, 454 U.S. 27, 39 (1981); *Batterton v. Francis*, 432 U.S. 416, 425 n.9 (1977), we find the Commission's dry rule—whether characterized as legislative

or interpretative—to be fundamentally at odds with the Btu measurement technique implicit in the NGPA.

Because we find the dry rule "not in accordance with law," we need not reach the issues of whether the rule had been promulgated with sufficient notice and opportunity to comment; whether the rule had been improperly given retroactive effect; or whether the Commission failed to guarantee pipelines and distribution companies automatic pass through of any retroactive payments. The only issue remaining for disposition is the motion of the intervenors to dismiss one of the petitioners, Lone Star Gas Company, for failing to meet the jurisdictional prerequisites of section 506 of the NGPA, 15 U.S.C. § 3416(a)(2) (Supp. V 1981). Section 506 requires any person seeking judicial review of a Commission order to have petitioned the Commission for rehearing within thirty days of the issuance of the order. *See Ecee, Inc. v. FERC*, 611 F.2d 554, 559-66 (5th Cir. 1980) (applying this requirement to persons seeking judicial review of agency rulemaking). It is undisputed that Lone Star did not file for rehearing of the Commission's Order 93, in which the Commission's dry rule was first announced, but did file within thirty days of the Commission's explanatory order, Order 93-A. Although we do not require persons to read vague agency rules with the clairvoyance of "the most tireless of advocates," *Sam Rayburn Dam Electric Co. v. FPC*, 515 F.2d 998, 1117 n.35 (D.C. Cir. 1975), the fact that all of the other petitioners in this action found Order 93 sufficiently clear to trigger petitions for agency reconsideration convinces us that the Order was not so ambiguous as to excuse Lone Star from the NGPA's filing provision. Accordingly, we dismiss Lone Star for failing to meet the jurisdictional requirements of the Act. Because all of the arguments advanced by Lone Star before this court are also advanced by several of the other petitioners, however, our dismissal of

Lone Star does not affect the issues presented in this case.

For the reasons discussed above, the Commission's measurement of Btu content established in section 270.204 of its rules of practice must be vacated.

It is so ordered.

APPENDIX B

DC-C-37

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Charles B. Curtis, Chairman; Georgiana Sheldon, Matthew Holden, Jr., and George R. Hall.

Docket No. RM80-33

FINAL RULES FOR)
PART 270, SUBPART B,)
SECTIONS 270.201,)
270.202 AND 270.204)

ORDER NO. 93

FINAL RULE

(Issued July 16, 1980)

On December 1, 1978, the Federal Energy Regulatory Commission (Commission) issued interim regulations (43 *Fed. Reg.* 56448, December 1, 1978) implementing certain sections of the Natural Gas Policy Act of 1978 (NGPA), 15 U.S.C. 3301-3432, including Subpart B of Part 270 which prescribes special rules relating to first sales of natural gas. On January 18, 1980, the Commission amended the interim rules in Subpart B to include provisions for percentage-of-proceeds sales. (Order No. 68, issued in Docket No. RM80-14, 45 *Fed. Reg.* 5678, January 24, 1980.)

This final rule addresses the following sections of Subpart B of Part 270: § 270.201, which deals with first sales of commingled gas; § 270.202, which prescribes rules for resellers of natural gas; and § 270.204, which describes a standard method of determining the Btu con-

tent per unit volume of gas sold under the NGPA. The rule addresses comments concerning the December 1 interim rules as well as requests for clarification of Order No. 68 as it relates to percentage-of-proceeds sales. The remaining portions of Subpart B (§§ 270.203, 270.205, and 270.206) have been addressed in separate rulemakings and will not be considered here.

* * * *

D. *Section 270.204.*

Section 270.204 describes a standard method for determining Btu content per unit volume of natural gas. Btu content must be measured for much of the gas sold under the NGPA because the Act requires that first sales not exceed certain maximum lawful prices, which are stated in terms of MMBtu's.[10] Furthermore, any seller whose gas is subject to section 105 may need to know the Btu content of the gas in order to determine whether he is subject to the maximum lawful price in section 105(b)(1) or that in section 105(b)(2).[11]

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[10] Maximum lawful prices for "minimum rate gas," *see* § 271.101(a), and maximum lawful prices for certain sales under sections 105 and 106(b) are expressed on an Mcf, and not an MMBtu, basis. *See* note 6 *infra*.

[11] For example, where gas is subject to section 105 (existing intrastate contracts), it will be necessary to know the Btu content in some but not all cases. Initially, a Btu content test may be necessary in order to determine whether the sale is subject to section 105(b)(1) or section 105(b)(2). If the price under the terms of the existing contract is calculated on a volumetric basis (per Mcf) and is clearly lower than the maximum lawful price per MMBtu under section 102 on November 9, 1978, the price per Mcf under the terms of the existing contract is the maximum lawful price. There is no need to measure the heat (Btu) content of the gas. However, if the price under the existing contract appears to be close to the section 102 maximum lawful price, it becomes necessary to ascertain the Btu content of the gas in order to determine whether or not the contract price exceeds the new gas ceiling price determined as of the date of enactment. For similar reasons, a Btu content test may be necessary for sales subject to section

One comment on this section asked at what site Btu content should be measured for purposes of billing. If a well produces from several completion locations and the various streams are subject to different maximum lawful prices, Btu content should be determined for each stream subject to a different maximum lawful price. The Commission will accept any method for Btu measurement that is reasonably designed to determine the Btu content of each such stream.

One comment asked whether Btu content tests are required when gas is sold pursuant to "casinghead gas contracts which are of the percentage type." The comment argued that the exigencies of such arrangements make it impractical to perform Btu content tests on a well-by-well basis, *i.e.*, prior to commingling in a central separator serving a number of wells. As noted above, the Commission will accept any measurement method reasonably designed to ascertain Btu content. In this case, the reseller may use any estimation method reasonably designed to measure Btu content if it is impractical to measure Btu content prior to commingling.

Several comments noted that § 270.204 provides that Btu content must be measured on a "saturated with water vapor" basis rather than on the basis of the actual water vapor content of the gas as delivered. The comments asserted that under this rule the seller would be paid for less Btu's than would actually be delivered if the gas were sold on a dry (unsaturated) basis.

This assertion is erroneous. Section 270.204 merely describes the test standard for expressing the number of Btu's contained in a cubic foot of gas under certain conditions. Under this standard, the heat value is expressed

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105(b)(1) if and when the contract price escalates under the contract terms to an amount close to the section 102 maximum lawful price. (Of course, the heat content of the gas must be measured if the sale is subject to section 105(b)(2)). *See* section 105(b).

as the number of Btu's per cubic foot of gas "saturated with water vapor." The Commission is aware that the water vapor content or pressure of the gas when tested may be different than described in this standard, and may also be different than the conditions that obtain when the gas is delivered. Therefore, the results obtained under test conditions, be they those in the rule or others, must be converted to figures that reflect the actual condition of the gas on delivery in order to properly price the gas.

A few commenters asked what is the correct pressure base for measuring Btu content per unit volume of natural gas.

Section 270.204 uses a standard pressure base of 30 inches of mercury at 32 degrees Fahrenheit to determine what constitutes a cubic foot of gas and to determine how many Btu's are in that cubic foot of gas. These comments noted correctly that the pressure base of 30 inches of mercury at 32 degrees Fahrenheit for expressing Btu content per unit volume of natural gas does not convert precisely to 14.73 pounds per square inch (p.s.i.), the pressure base used in section 2(29) of the NGPA to define a standard Mcf (1,000 cubic feet) of natural gas. We note that measurement of the Btu content of natural gas can be made at any desired pressure base, provided that the measurement is accurate and provided that the measurements for Btu content and for volume are converted to a common pressure base.[12]

Another comment asked that the Commission provide a list of the acceptable methods of measuring Btu content, *e.g.*, chromatograph, calorimeter, etc. The Commission believes at this time that the method of measure-

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[12] The comments stated that traditionally intrastate pipelines use a pressure base of 14.735 p.s.i., while interstate pipelines use a pressure base of 14.73 p.s.i. As stated above, either pressure base may be used as long as the correct number of Btu's sold is known.

ment may best be determined by the parties to the sales contract. We will accept any reasonable method for determining Btu content upon which the parties agree. We note, however, that contractual obligations should be observed and that appropriate conversion factors should be applied in order to modify test results to actual delivery conditions of the gas.

III. PUBLIC PROCEDURES AND EFFECTIVE DATE

The regulations in Subpart B of Part 270 (except for those interim rules promulgated in Order No. 68) were originally proposed for comment in November of 1978 in Docket No. RM79-3 and issued as interim regulations on December 1, 1978 (43 *Fed. Reg.* 56448, December 1, 1978). For 60 days thereafter comments were received, and during that period hearings were held on these regulations. By this process the Commission complied with 5 U.S.C. § 553 and with section 502(b) of the NGPA, which requires that, "[t]o the maximum extent practicable," an opportunity for the oral presentation of data, views and arguments be afforded for certain regulations under the NGPA. The amendments contained in this order rest upon consideration given to the information received during the above-described notice, comment, and hearing process. The Commission finds that further notice and public procedure with respect to §§ 270.201, 270.202 and 270.204 is unnecessary.

Paragraphs (e)(3) and (h) of the interim rules were originally issued in Docket No. RM80-14 (Order No. 68) as amendments to the interim rules in Part 270. The clarifications to those paragraphs, which are being issued here as final rules, respond to petitions for clarification of those paragraphs filed in Docket No. RM80-14.

Sections §§ 270.202 and 270.204 are being issued as final regulations, effective (30 days from date of issuance). Section 270.201 is revoked retroactive to December 1, 1978. However, no first seller will be subject to a

refund obligation, or enforcement action, for having charged and collected any rate in reliance on that section for deliveries which occurred before September 1, 1980.

(Natural Gas Policy Act of 1978, 15 U.S.C. §§ 3301-3432; Natural Gas Act, as amended, 15 U.S.C. 717, *et seq.*; Department of Energy Organization Act, 42 U.S.C. §§ 7107-7352; E. O. 12009, 42 *Fed. Reg.* 46267.)

In consideration of the foregoing, §§ 270.201, 270.202, and 270.204 of Part 270, Subchapter H, Chapter I, Title 18, Code of Federal Regulations, issued as interim regulations (43 *Fed. Reg.* 56448, December 1, 1978 and 45 *Fed. Reg.* 5678, January 24, 1980) are promulgated as final regulations and are amended as set forth below, effective as set forth above.

By the Commission.

[SEAL]

/s/ Kenneth F. Plumb
KENNETH F. PLUMB,
Secretary.

* * * *

3. Interim regulation § 270.204 is adopted as a final regulation.

§ 270.204 *Btu content per cubic foot of natural gas.*

(a) *Measurement.* The Btu content of one cubic foot of natural gas under the standard conditions specified in paragraph (b) of this section is the number of Btu's produced by the complete combustion of such cubic foot of gas, at constant pressure with air of the same temperature and pressure as the gas, when the products of combustion are cooled to the initial temperature of the gas and air and when the water formed by such combustion is condensed to a liquid state.

(b) *Standard conditions.* The standard conditions for purposes of paragraph (a) of this section are as follows: The gas is saturated with water vapor at 60 degrees Fahrenheit under a pressure equivalent to that of 30.00 inches of mercury at 32 degrees Fahrenheit, under standard gravitational force (980.665 centimeters per second squared).

4. The table of contents of Subpart B of Part 270 is amended by deleting "First sale of natural gas subject to differing maximum lawful prices" and by inserting in lieu thereof "[Reserved]."

DC-C-1

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Georgiana Sheldon, Acting Chairman; Matthew Holden, Jr., George R. Hall and J. David Hughes.

Docket No. RM80-33

FINAL RULES FOR)
PART 270, SUBPART B,)
SECTIONS 270.201,)
270.202 AND 270.204)

ORDER NO. 93-A

ORDER DENYING REHEARING AND CLARIFYING ORDER NO. 93

(Issued April 24, 1981)

On July 16, 1980, the Commission issued final regulations in Order No. 93 (45 Fed. Reg. 49077, July 23, 1980) which amended the Commission's interim rules relating to first sales of natural gas that are resales and the standard for determining the Btu content of natural gas. Eight timely applications for rehearing were filed.[1] Two petitioners also requested a partial stay of the order.

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[1] Michigan Wisconsin Pipe Line Company (also requested clarification); El Paso Natural Gas Company (also requested a partial postponement); Transcontinental Gas Pipe Line Corporation (Transco) (also requested clarification); United Gas Pipe Line Company; Texas Gas Transmission Corporation; Interstate Natural Gas Association of America (INGAA) (also requested clarification); Natural Gas Pipeline Company of America (Natural) (also requested reconsideration and a partial stay); and Consolidated Gas Supply Corporation.

Subsequently, two requests for clarification [2] and two applications for stay [3] were filed.

On September 15, 1980, the Commission granted rehearing of Order No. 93 solely for purposes of further consideration but denied the two petitions for partial stay of Order No. 93. On October 15, 1980, Natural filed an application for rehearing of the Commission's denial of its petition for a partial stay. On November 14, 1980, the Commission granted rehearing on that application solely for purposes of further consideration.

None of the filings contested or raised issues concerning the regulations regarding resales; all addressed the final rule in § 270.204 which clarified the interim rule describing a standard for determining the Btu content of natural gas. This order on rehearing denies all applications for rehearing or reconsideration of Order No. 93 as well as the two additional petitions for stay; however, it grants requests for clarification of Order No. 93 and the final rule in § 270.204.

This order, like Order No. 93, authorizes natural gas subject to a first sale to be priced based on the number of MMBtu's actually delivered, to the extent such pricing is contractually permissible. The order also makes clear that the Commission will not require continuous monitoring and recording of heating value (MMBtu's) but will accept any reasonable, unbiased method acceptable to the industry and the contracting parties for periodically measuring gas composition, gas heating value or other variables in order to determine the number of MMBtu's actually delivered in a first sale. Pipelines subject to the jurisdiction of the Commission will be permitted the opportunity to demonstrate in their next PGA filing the

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[2] Tennessee Gas Pipeline Company and Valero Transmission Company. (Valero also requested reconsideration.)

[3] Arkansas Louisiana Gas Company (Arkla) and Transco.

appropriateness of rate treatment for any claimed retroactive payments occasioned as a result of the Btu Rule controversy.

I. *Background*

In Title I of the NGPA, Congress prescribed "ceiling prices" for first sales of natural gas. It did so by establishing maximum lawful prices "per MMBtu" (i.e. Million British Thermal Units) for various categories of natural gas. The "ceiling price" chargeable for a first sale was to be determined by multiplying the applicable maximum lawful price per MMBtu by the number of MMBtu's subject to the first sale.

In Order No. 93 the Commission promulgated § 270.204 as a final rule. The rule itself merely describes the standard conditions under which the number of MMBtu's in a volume of natural gas is measured.[4] However, recognizing that actual delivery conditions vary widely and are most often different from the defined standard conditions, the Commission noted in the preamble to Order No. 93 that the results of Btu measurements at the defined standard conditions must be adjusted to account for actual delivery conditions before determining the "ceiling price" that can be charged for the sale under the NGPA (i.e., the maximum lawful price per MMBtu multiplied by the number of MMBtu's actually delivered).[5] This

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[4] The essential parameters of the "standard conditions" are that the gas is at a temperature of 60°F, under a pressure of 30 inches of mercury (approximately 14.73 pounds per square inch), and, at these defined temperature and pressure conditions, the gas is saturated with water vapor. (*See* note 21, *infra*, for full definition.) At these defined temperature and pressure conditions, natural gas will contain approximately 820 pounds of water vapor per million cubic feet of total gas. (*See* Appendix I, "Variance in Water Vapor Content and Heating Value.")

[5] As a practical matter, the determination would most often be made by measuring the gas on a volumetric basis at delivery

statement was predicated on the Commission's belief that, for purposes of determining the NGPA "ceiling price," the number of MMBtu's subject to a first sale is the number of MMBtu's actually delivered to the purchaser.

The petitions for rehearing raised several arguments concerning the Commission's statement in the preamble to Order No. 93 that "the results obtained under test conditions, be they those in the rule or others, must be converted to figures that reflect the actual condition of the gas on delivery in order to properly price the gas." [6] Three petitioners alleged that under Order No. 93 the maximum lawful prices for sections 104, 106(a) and 109 would exceed those prescribed under Title I of the NGPA because, under the Natural Gas Act (NGA), the Btu adjustment to the volumetric base price was based on the prevailing industry practice of determining Btu content at standard conditions and permitted no conversion to reflect the number of MMBtu's actually delivered. A fourth petitioner argued that Congress had adopted this prevailing industry practice for all Title I categories of natural gas and that Order No. 93 thus violated all of the NGPA "ceiling prices."

Several petitioners, conceding for purposes of discussion that Order No. 93 did not violate Title I "ceiling prices," questioned the effect of the Commission's statement on specific contractual provisions under which the number of MMBtu's to be attributed to an Mcf of natural gas for pricing purposes is to be based on the results of Btu measurement at the standard conditions. They indicated that the language in Order No. 93 was ambiguous but that an interpretation that nullified such contractual provisions would violate section 101(b)(9) of the NGPA

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conditions, multiplying the number of Mcf's so measured times the number of MMBtu's in an Mcf of the gas at delivery conditions, and multiplying the results by the applicable maximum lawful price.

[6] 45 Fed. Reg. 49077, 49080.

which states that the Title I maximum lawful prices do not nullify or supersede the contract price. Should the contract price depend on the number of MMBtu's actually delivered, they asked what monitoring procedures would be required by the Commission in order to determine the Btu content of the natural gas at delivery conditions.

Two petitioners alleged that the clarifications in the final rule and the explanatory language in the preamble of Order No. 93 sufficiently altered the interim rule in § 270.204 so as to violate the notice and comment provisions of the Administrative Procedure Act (APA) and argued that the final rule should have prospective effect only.[7] In the alternative, these and other petitioners sought a one-time PGA filing to pass through the increase in prices that they alleged would result were the Commission to retain its position on the Btu issue on rehearing.

We have addressed each of these issues in this order.

II. *Lawfulness of "Ceiling Prices" Under Order No. 93*

A. *Petitioners' Argument*

The maximum lawful prices published for sections 104 and 106(a) are referenced to the just and reasonable rates that applied to various categories of natural gas under the NGA on April 20, 1977. These rates consisted of a base price per Mcf which was to be adjusted to the extent the gas did or did not contain heating value equal to one MMBtu per Mcf. Although the dollar amount chargeable for a sale of natural gas under the NGA depended on the number of Mcf's actually delivered, the

[7] The Commission stated in Order No. 93 that the amendments to the interim rule were of a clarifying nature. Therefore, contrary to one petitioner's allegation, their effective date is not September 22, 1980, (the effective date of Order No. 93) but December 1, 1978, the effective date of the interim rule. *Id.* at 49078.

heating value adjustment was based on Btu measurements made at standard conditions and permitted no conversion to actual delivery conditions. Measurement at standard conditions usually understates the number of MMBtu's actually delivered to the purchaser. (See Appendix I for more detailed discussion.)

Although sections 104 and 106(a) reference the NGA just and reasonable rates, which were stated on a *per Mcf* basis, the maximum lawful prices for those sections are stated on a *per MMBtu* basis. The Commission's adoption of the per-Mcf base price as the maximum lawful price, when coupled with the requirement under the Btu rule that the maximum lawful price be applied to every MMBtu actually delivered, for purposes of determining the NGPA "ceiling price," has resulted in "ceiling prices" that are higher than some purchasers claim would have been applicable under the NGA (ignoring the differences in inflation adjustments between the NGA and NGPA pricing schemes).

The petitioners argued that, except for the variation in inflation adjustments under the NGA and the NGPA, Congress intended to maintain producer revenue levels extant under the NGA. Noting that the Commission's current regulations confound this alleged purpose, they contended that the Commission must either rescind its statements in Order No. 93, regarding conversion of heat content findings at standard conditions to findings that would obtain at actual delivery conditions, or lower its published maximum lawful prices for sections 104 and 106(a) to counteract the inflationary effect of the language in Order No. 93.[8]

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[8] One petitioner limited this argument to sections 104 and 106(a). Two others extended it to section 109 based on statements in the legislative history that the section 109 price is intended to be the same as the section 104 price. The fourth petitioner alleged, based on the statements concerning sections 104 and 109 and the need to interpret the phrase "per MMBtu" consistently, that the argument pertains to all Title I pricing categories.

The petitioners argued, in effect, that the phrase "per MMBtu" in the NGPA merely establishes the commodity unit to be measured, not "how" or "when" such measurement is to be made. They argued that the prior practice of pricing based on the results of Btu measurements at standard conditions survives and is incorporated into the NGPA because the statute contains no clear intent to abrogate that practice. Several petitioners supported their argument by referring to section by section analyses by Representative Dingell and Senator Jackson in the legislative history[9] and alleging that these statements indi-

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[9] *Statement by Senator Jackson*:

> The maximum lawful price computed in accordance with subsection 104(b) is the same as the maximum lawful price computed in accordance with subsection 109(b). The base rate used in both computations is subject to an inflation adjustment. In other words, the just and reasonable rates set by the Federal Power Commission and in effect, as of April, 1977 are frozen as of that date and the inflation adjustment provided under this Act is to be added from that date forward. For example, the new gas rate set in FPC Opinion No. 770-A, applicable to certain eligible producers was $1.45 in April, 1977.
>
> Thus, $1.45 would be the base rate applicable to certain eligible producers subject to section 104 and for all gas subject to section 109. The conferees do not intend to allow both the escalators of 1 cent each calendar quarter provided by Opinion No. 770-A, and the inflation adjustment provided by this Act to operate. Only the inflation adjustment provided by this Act will be allowed to operate after April, 1977. 124 Cong. Rec. S 15020-21 (Sept. 13, 1978).

Statement by Congresseman Dingell:

> Section 104 establishes the ceiling price mechanism applicable to natural gas dedicated to interstate commerce prior to enactment of the bill and for which a just and reasonable rate had been established under the Natural Gas Act. The applicable just and reasonable rate in effect in April, 1977 is referenced as the base price to which the inflation adjustment factor is applied to yield the maximum lawful price in any future month.
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> The just and reasonable rate under FPC Opinion 770-A applicable to wells spudded on or after January 1, 1975, in-

cate Congressional intent to maintain producer revenues for NGA gas at pre-NGPA levels.

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cludes a $.01 escalator each calendar quarter. Moreover, technically speaking, Opinion 770-A establishes a just and reasonable rate of $1.62 per Mcf for this vintage. The $1.42 per Mcf price most commonly referred to is merely the base rate allowed under the decision discounted to its then present value. The $.01 per quarter escalator is designed to yield an average $1.62 per Mcf rate over the projected life of the average reservoir.

Accordingly, a question has arisen whether the just and reasonable rate referenced in section 104(b)(1)(A)(i) is to include the $.01 quarterly adjustment in the inflation adjustment under section 104(b)(1)(A)(ii). The answer is an emphatic NO. The conferees did not intend a double dip. The "just and reasonable rate * * * applicable * * * on April 20, 1977" is intended to incorporate by reference the $1.45 per Mcf price permitted in April 1977. This price is to be adjusted thereafter only pursuant to the inflation adjustment provided in section 104(b)(1)(A)(ii). (Moreover, lest there be any doubt, the conferees did not intend the reference to be to the $1.62 price either.) That the conferees intended to reference the $1.45 per Mcf price is supported by the construction of section 109, wherein the $1.45 price is set forth. Section 104 deals with area rates, national rates of several vintages, and special relief pricing. Therefore it was not possible or practical to specify each rate. Incorporation by reference was required. In the case of section 109, a specific rate was possible and the rate selected was the just and reasonable rate under Opinion 770-A applicable on April 20, 1977, i.e., $1.45 per Mcf. This assured that these sections would be consistent with one another. A question has arisen respecting the pricing of interstate gas, presently subject to contract, including a warranty contract, at a price lower than the just and reasonable rate presently applicable to the gas, following expiration of that contract. As the preceding paragraphs indicate, sections 104 and 106 would be applicable. Under section 101(b)(5), the section yielding the higher price would establish the maximum lawful price. If a contract is being satisfied with gas produced from wells of a vintage for which a higher just and reasonable rate has been established by the Commission that just and reasonable rate is referenced as the basis for the maximum lawful price under section 104. Moreover, once the existing contract no longer limits the price (see section 101(b)(9)), the producer could

B. *Summary of Commission Decision*

In developing a comprehensive wellhead pricing system for interstate and intrastate sales of natural gas, Congress had to coordinate the previous NGA pricing system with the system of incentive prices it had established under the NGPA for the purpose of encouraging production of domestic supplies of natural gas. It decided that coordination of these two pricing systems required uniformity with respect to the commodity priced (volumes versus heating value) as well as the methodology for adjusting the maximum lawful prices based on inflation.

The latter objective required that Congress abolish the quarterly escalator that had applied under the NGA pricing scheme and replace it with the monthly inflation adjustment applicable to the incentive pricing categories. This is the issue addressed by both Congressman Dingell and Senator Jackson in those portions of the legislative history cited by the petitioners.

Congress also elected to impose uniformity with respect to the commodity to be priced and chose to establish energy-referenced prices (dollars per MMBtu) as opposed to volume-referenced prices (dollars per Mcf). This choice was inherent in the Congressional intent to establish incentive prices based on the commodity value of alternative energy sources. Thus the maximum lawful prices for those sections of Title I that reference the NGA just and reasonable per-Mcf rates (as well as section 109) were also stated on a "per MMBtu" basis.

However, Congress left implementation of energy-referenced pricing for these sections to the Commission. Recognizing that a problem might exist in converting

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charge and the purchaser could pay any amount up to the maximum lawful price which, under both sections 104 and 106, would be based upon the just and reasonable rate which but for enactment of this legislation, would have been applicable. 124 Cong. Rec. H 13117 (Oct. 14, 1978).

NGA just and reasonable rates to NGPA maximum lawful prices, the Statement of Managers adverted to that problem without resolving it by merely referencing the "just and reasonable rates that were in effect on April 20, 1977, as *converted, if necessary* to a million Btu basis. . . ." (Emphasis added).[10] Thus, it was left to the Commission to resolve the conversion issue.

That Congress imposed this responsibility upon the Commision was entirely predictable because coordination of the NGA and the NGPA required the expertise of that agency familiar with the structure and intricacies of the prior NGA pricing scheme.[11] In discharging this responsibility, the Commission had to examine that NGA pricing scheme and establish a rational way to coordinate it with the NGPA. Had there been a direct correlation between the NGA's just and reasonable rates per Mcf and the NGPA's system of maximum lawful prices, which are stated on a "per MMBtu" basis, the Commission's task would have been a simple one. However, no such direct correlation exists. Thus the Commission was left with two inquiries. How should the number of MMBtu's upon which the NGPA "ceiling price" is based be determined: at standard conditions, *i.e.* in the same manner as Btu content had been determined under the NGA for purposes of quality control, or at actual delivery conditions? And, what should the maximum lawful price per MMBtu be for such gas?

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[10] Joint Statement of Managers, H. Rep. No. 95-1752, 95 Cong., 2d Sess. 82 (1978).

[11] The Congressmen's references in the legislative history to the specific Opinion 770-A rate for post-1974 wells (Opinion 770-A rate), upon which the maximum lawful prices for section 109 and one subcategory of section 104 are based, are inconsistent and confusing and suggest that neither Congressman was familiar with such intracacies of the regulatory scheme as the interface between volume-referenced pricing and the Btu adjustment procedure.

With respect to the Btu measurement issue, the Commission determined that the number of MMBtu's accounted for in establishing the "ceiling price" for a first sale of section 104, 106(a) and 109 gas should be the number of MMBtu's actually delivered. We made this decision based on examination of the commodity pricing concepts embodied in the NGPA and the NGA. In the NGPA's incentive pricing categories, heating value is priced on an *as-delivered* basis.[12] Although the commodity priced was volume rather than heating value, the NGA, too, priced the commodity on an as-delivered basis. Therefore, the Commission decided that consistency within the NGPA and continuity with the NGA required that conversion be accomplished so as to preserve the as-delivered pricing concept for sections whose maximum lawful prices are referenced to the NGA just and reasonable rates. (See Section II C for more detailed analysis.)

With respect to the maximum lawful prices for these sections, we did not think it clear from examination of the NGPA and its legislative history that Congress' purpose was to maintain producer revenue levels for NGA gas at pre-NGPA levels.[13] Certainly the language of the statute itself manifests no such intent. Indeed, Congress had implicitly abandoned any goal of maintaining pre-NGPA revenue levels in favor of uniformity when it imposed the same inflation adjustment for NGA-referenced and incentive pricing categories. Had Congress preserved the escalation provisions in Opinion 770-A, the maximum lawful price for April, 1981, for that subcategory of section 104 gas referenced to the rate for post-1974 wells in Opinion 770-A (Opinion 770-A rate) would have been

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[12] *See* discussion *infra*.

[13] Examination of the cited portions of the legislative history suggests that neither Congressman was aware of the Btu conversion issue and that both were addressing themselves to the "double dip" issue relating to escalations of the Opinion 770-A rate. *See* note 11, *supra*.

$1.61 per MMBtu instead of the $2.011 per MMBtu price that results from substitution of the NGPA monthly inflation adjustment methodology. Comparison of these two prices undermines the petitioners' theory that Congress intended that the NGPA maintain NGA producer revenue levels.[14]

Based on the absence of a direct correlation between the NGPA and NGA pricing schemes, the major alteration in producer revenue levels that Congress itself accomplished by changing the escalation factors for NGA-referenced gas, and the lack of any clear evidence in either the NGPA or its legislative history as to what result Congress would have reached had it resolved the Btu conversion issue itself, we decided to adopt a per-MMBtu maximum lawful price of $1.45 for Opinion 770-A rate gas subject to section 104. By adopting what were essentially the base prices as of April 20, 1977, for section 104 (and section 106(a)), we adapted the NGA's cost-revenue balancing scheme to prices stated on a "per MMBtu delivered" basis in order to promote maximum continuity between the NGA and the NGPA and maintain internal consistency within the Title I pricing scheme. With respect to the latter objective, we note that adoption of the $1.45 base price effects the Congress' intent that the maximum lawful price for the Opinion 770-A subcategory of section 104 be the same as that imposed by Congress for section 109. (*See* discussion in Section II D and Appendix I, "Compatibility of NGA and NGPA Prices.")

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[14] Although the petitioners acknowledged that a change in revenue levels resulted from Congress' replacing the NGA escalation methodology, they argued that Congress intended that no *additional* increases be effected by the Commission. However, the logic and persuasiveness of their argument are seriously impaired when the purported 2% increase in producer revenue levels effected by Order No. 93 is compared to the substantial 39% increase in the maximum lawful price implemented by Congress itself. (Had Congress not changed the NGA quarterly escalator, the increase in the maximum lawful price would have been 11 percent, rather than 39 percent.)

C. *The Measurement Issue*

Like the NGA, the NGPA establishes pricing guidelines for sales of natural gas. The commodity priced under NGA regulations was *volume* units (Mcf's) of natural gas delivered. However, one of the purposes for enacting the NGPA was encouragement of domestic production of natural gas. Congress viewed energy sources as fungible and attempted to encourage domestic production of natural gas by pricing it based on its comparable energy value with respect to alternative fuel sources. In order to encourage certain new production it set a maximum lawful price for section 102 equivalent to the average commodity value of the refiner acquisition cost of domestically produced oil.[15]

Because of a very clear physical difference between natural gas and other fuels, true comparison can only be achieved by applying the prescribed maximum lawful price to the number of MMBtu's in a volume of gas at delivery conditions rather than to some theoretical quantity such as the number of MMBtu's at standard conditions. This is true because, unlike other fuels, which are either liquid or solid as opposed to gaseous, water vapor in natural gas displaces hydrocarbon compounds, resulting in a diminution of the heating value of the natural gas. Measurement at standard conditions understates the heating value of the gas at delivery conditions.[16] Therefore, it is essential that the "ceiling price" be based on the actual heating value of the gas, *i.e.* the number of MMBtu's actually delivered, in order to achieve the Congressional purpose of pricing natural gas by comparison to the heating value of the selected alternative fuel.

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[15] H. Rep. No. 95-1752 at 67 and 68.

[16] The amount of water vapor contained in natural gas at the standard temperature and pressure conditions greatly exceeds the amount of water vapor that can be contained in natural gas at most pressure and temperature delivery conditions. (*See* note 4, *supra*, and graph in Appendix I.)

Like incentive pricing categories such as section 102, the maximum lawful prices for sections 104, 106(a) and 109 are stated on a "per MMBtu" basis. Although the difference in pricing mechanisms between section 102 and sections 104 and 106(a) make their direct comparison more difficult for purposes of interpreting the phrase "per MMBtu," (sections 104 and 106(a) reference prices extrinsic to the statute itself, while section 102 states a specific monetary amount), direct comparison of the pricing mechanisms in sections 102 and 109 is fairly straightforward because the structure of section 109 is identical to that of section 102, save for the differences in the stated monetary amount. This identity suggests that the "ceiling price" for section 109 should also be based on the number of MMBtu's actually delivered.

Although it is not essential that identical provisions in a statute be interpreted consistently, there must be some compelling reason to do otherwise. None exists here. The legislative history indicates clearly that the maximum lawful price for section 109 is the same as the maximum lawful price for the subcategory of section 104 gas that is referenced to the Opinion 770-A rate. However, contrary to the petitioners' arguments, the legislative history provides no conclusive evidence as to what that section 104 rate should be when converted to a "per MMBtu" basis. Thus it fails to provide a compelling basis for disparate interpretations of the phrase "per MMBtu" in sections 102 and 109 such that the number of MMBtu's subject to a first sale of section 102 gas would be accounted for differently from the number of MMBtu's subject to a first sale of section 109 gas.

What the legislative history does provide, given identical interpretations of the phrase "per MMBtu" for sections 102 and 109 and the Congressmen's comments in the legislative history concerning the identity of the maximum lawful prices in section 109 and the Opinion 770-A subcategory of section 104, is a basis for interpreting the

phrase "per MMBtu" in section 104 consistently with its interpretation in sections 102 and 109, i.e., as a requirement that the "ceiling prices" for section 104 (and, by implication, section 106(a)) be based on the heating value of the gas at actual delivery conditions.

Requiring that the "ceiling price" for first sales of section 104, 106(a) and 109 gas be based on the number of MMBtu's actually delivered also promotes continuity with the NGA by preserving the per-unit-delivered commodity pricing concept employed with respect to volume units under the NGA.

For these reasons, the Commission has decided to retain its original position that the NGPA "ceiling price" is dependent upon the number of MMBtu's actually delivered rather than the number of MMBtu's measured at standard conditions.

D. *The Maximum Lawful Price Issue*

Convinced that the commodity unit priced under the NGPA is an MMBtu and that the NGPA "ceiling prices" are to be determined on an as-delivered basis, the Commission was next required to explore the suggestion made by some petitioners that the NGA's $1.45 per Mcf base price on April 20, 1977 be reduced to $1.42 in order to maintain pre-NGPA producer revenue levels for that subcategory of section 104 gas that was previously priced at the Opinion 770-A rate and the further suggestion that all other NGA-referenced rates be similarly reduced.

There is no technical theory that compels adoption of lower maximum lawful prices such as $1.42 because there is no direct correlation between the NGA and NGPA pricing schemes. Furthermore, as we have already indicated, neither the statutory language nor the legislative history provides any clear indication of what result Congress would have reached had it resolved the conversion problem itself. Faced with the responsibility of coordi-

nating the disparite pricing schemes imposed under the NGA and the NGPA, the Commission decided to resolve the conversion issue by pursuing a policy of preserving internal consistency within the Title I pricing scheme and ensuring maximum conceptual continuity between the NGPA's per-MMBtu-delivered pricing scheme and the cost-revenue balancing methodology under which the NGA's per-Mcf base prices were originally established. For the reasons stated below, that policy is best promoted by adopting the base prices for the various categories of NGA gas as the maximum lawful prices for sections 104 and 106(a). We find support for this result by noting that Congress intended identity of pricing for section 109 and the Opinion 770-A subcategory of section 104 and that adoption of the $1.45 base price will impose the same maximum lawful price for that subcategory of section 104 as the maximum lawful price Congress *stated* in section 109.

As has been previously noted, the just and reasonable producer rates to which the maximum lawful price in sectons 104 and 106(a) are referenced were not established on a "per MMBtu delivered" basis. Instead, they were based on the number of Mcf's delivered and included a Btu quality adjustment determined by the number of MMBtu's measured at standard conditions. Because the NGA pricing scheme was inconsistent with respect to the methodologies for establishing volume as opposed to Btu content, no direct correlation exists between the NGA just and reasonable rates, in which heating value was an arbitrarily-derived numerical factor used to make a quality adjustment to the volume-referenced price, and the NGPA energy-referenced "ceiling prices" in which heating value is the price determinant.

Although it is mathematically possible to convert the Opinion 770-A rate of $1.45 per Mcf to a rate of $1.42 per MMBtu, in an attempt to maintain NGA producer revenue levels, it cannot be shown that such a procedure

would be applicable to all (or any) sales of that subcategory of section 104 gas. This is true because, as explained earlier, the number of MMBtu's per Mcf varies with delivery conditions, and delivery conditions vary widely.[17] Furthermore, adoption of the $1.42 price elevates an arbitrarily-derived Btu adjustment factor above the cost-referenced base price as the conceptual vehicle for converting NGA rates to NGPA maximum lawful prices, based on mere semantic happenstance. Although both the maximum lawful prices and this arbitrary adjustment factor are expressed in terms of Btu's, their conceptual underpinnings are entirely different and cannot be reconciled.

Absent a direct correlation between the NGA and NGPA prices, the Commission feels justified in adopting $1.45 (the base price) as the maximum lawful price for the Opinion 770-A subcategory of section 104 gas. Under the NGA pricing scheme, $1.45 was essentially the quotient obtained by dividing projected finding and production costs by the reported number of Mcf's that would ultimately be produced from discovered reserves. The production data were based on the number of Mcf's available at actual delivery conditions. The touchstone for this computation was the concept of an "average Mcf." Such an average Mcf would typically contain approximately seven to seventy pounds of water vapor per MMcf.[18] The adjustment for Btu content, based on standard conditions, was simply superimposed on this per-unit-delivered, cost-referenced rate. It assumed a water vapor content

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[17] Although many interstate contracts limit the water vapor content of natural gas at delivery to seven pounds per MMcf, not all contracts contain such provisions, and not all gas is so composed at delivery.

[18] This assumes a delivery temperature in the range of 50°F to 70°F and delivery pressures in the range of 100 to 1000 pounds per square inch. These ranges of temperature and pressure would likely cover most delivery conditions.

of 820 pounds per MMcf. As a technical matter, its application to the production data would underestimate the average MMBtu content of the reported volumes by about 1.74%.[19]

This inconsistency in measurement methodologies could have been eliminated either by adjusting the production data prior to rate derivation or by keying the Btu adjustment to actual delivery conditions. Had the production data been converted to standard conditions to rate derivation, the number of Mcf's would have been reduced commensurate with the reduced heating value of an Mcf at standard conditions. Reduction of the denominator in the cost equation (i.e. the number of Mcf's) would have produced a base price greater than $1.45 per Mcf. Subsequent adjustments to the per-Mcf base price to reflect the Btu content of the gas at standard conditions (which represents a decrease in the number of MMBtu's at actual delivery conditions) would have resulted in a just and reasonable rate of essentially $1.45 per MMBtu actually delivered. (*See* "Sample Computation" in Appendix I.) The Commission has achieved essentially the same result for purposes of establishing the NGPA "ceiling price" for Opinion 770-A rate gas subject to section 104 by adopting $1.45 as the maximum lawful price and requiring that it be applied to the number of MMBtu's actually delivered.

The Commission believes that our conversion policy is reasonable and justified. We note that it effects the Congress' intention that the maximum lawful price stated in section 109 be identical to the maximum lawful price for gas previously subject to the Opinion 770-A rate. We are

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[19] This was no obstacle to its use for quality control purposes, however, and it had the added advantage of conforming to industry quality control practices. However, its acceptance for quality control purposes does not support, and is in fact unrelated to, its adoption as the determining factor in changing from a volume-referenced to an energy-referenced pricing scheme.

unpersuaded that we should engender the confusion and uncertainty that would result were we now to alter our decision with respect to this policy and amend the maximum lawful prices.

III. *Contractual Provisions and Monitoring*

A. *Petitioners' Arguments*

Every petitioner that filed an application for rehearing, reconsideration, or clarification of Order No. 93 interpreted Order No. 93 as possibly requiring that a purchaser pay the applicable maximum lawful price for each MMBtu actually delivered. Several petitioners noted that the majority of sales contracts price natural gas on an Mcf rather than on an MMBtu basis and provide for adjustment of the volumetric price to reflect the Btu content of the gas. They explained, with regard to this Btu adjustment, that a large number of such contracts require that the Btu content of gas be determined based on measurement at the standard conditions, despite the fact that the actual delivery conditions with respect to temperature and pressure may be different from the standard temperature and pressure conditions and the contract may require delivery of relatively dry gas (e.g. seven pounds of water vapor per MMcf). The petitioners complained that setting a "ceiling price" based on the number of MMBtu's actually delivered might nullify such contractual provisions.

Further, petitioners argued that if "ceiling prices" were based on the number of MMBtu's actually delivered, the cost of continuously monitoring actual delivery conditions would be prohibitively high. Assuming that implementation of Order No. 93 requires measurement of the Btu's actually delivered, petitioners were concerned that specific guidance had not been given as to whether and how to estimate the actual Btu content of gas at delivery conditions, other than the petitioners' inference that con-

tinuous monitoring would be required. Petitioners requested specific guidance as to what measurement procedures might be employed.

B. *Commission Decision*

Given that the NGPA pricing scheme is a significant departure from past Commission and industry practice, it is not surprising that its implementation has created confusion both for sellers and purchasers. Under the NGPA pricing scheme the "ceiling price" permitted under Title I for the sale of natural gas is based on the number of MMBtu's actually delivered. In adopting heating value as a pricing mechanism rather than a quality control index, Congress did not intend to override the terms of any contract unless the contract establishes a price in excess of the Title I "ceiling price." Thus, under the terms of a contract, natural gas may be priced by volume, by heat content, or by any other reasonable means agreed to by the parties so long as the price paid does not exceed the "ceiling price" permitted under Title I.

The Btu rule and explanatory text affect the determination of the "ceiling prices" that can be charged for natural gas under the NGPA. However, they do not require that the industry change its measurement or pricing practices. Temperature and pressure are routinely measured at the orifice meter of a natural gas sales point, and determination of Btu content for pricing purposes (based on chemical analyses or direct measurement with a calorimeter) has been required for years under the NGA pricing scheme. The Commission is aware of no significant problems with obtaining these measurements. As the Commission stated in Order No. 93,[20] we will accept any method accepted in the natural gas industry for determining the Btu content of the gas sold, including measurement procedures and measurement frequency. The

[20] 45 Fed. Reg. 49077, 49080.

Commission will also permit industry-accepted methodologies for converting Btu measurements at standard conditions to Btu content at actual delivery conditions. No further guidance needs be given except to say that the method cannot be biased so as to result in prices that exceed the permissible "ceiling prices."

IV. *Effective Date and PGA Trackers*

A. *Petitioners' Arguments*

Several petitioners, assuming that Order No. 93 requires a continuous determination of the number of MMBtu's actually delivered, requested that Order No. 93 not apply to sales that occurred prior to the effective date of the order. Two petitioners argued that making Order No. 93 effective retroactive to December 1, 1978, would violate the APA because the language of the interim rule in § 270.204 suggested that the prior Commission practice of adjusting the base price based on the number of MMBtu's measured at standard conditions, rather than the number of MMBtu's actually delivered, was to be continued under the NGPA.

Other petitioners expressed concern that they may owe money to producers for deliveries that have occurred since December 1, 1978, and requested, as an alternative to modifying the effective date of Order No. 93, that the Commission permit a one-time PGA filing to authorize passthrough of any payments required as a result of the Btu rule.

B. *Commission Decision*

Although the interim Btu rule was vague, contrary to the petitioners' allegations it was not identical to the Btu adjustment provisions contained in §§ 2.56a(c)(1) and 2.56b(d)(1) of the Commission's NGA regulations.[21]

[21] The text of the interim rule in § 270.204 reads as follows:

For purposes of determining the number of Btu's per unit volume of natural gas, the Btu content of one cubic foot of

The Commission's intent in issuing the interim Btu rule was merely to describe the standard conditions for measuring the Btu content of natural gas. Unlike the Commission's previous policy, this measurement was *not* to be "used in computing [a] rate adjustment." That phrase, which appeared in the NGA regulations, was specifically and intentionally deleted from the interim rule in § 270.204.

Nevertheless, some confusion developed because the interim rule language that replaced that phrase was itself ambiguous. Therefore, the Commission modified the wording of § 270.204 in Order No. 93 and supplied accompanying text explaining the Commission's position with respect to the issue of Btu measurement. Because Order No. 93 is but a clarification of the interim rule, it is ef-

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natural gas is the number of Btu's produced by the combustion, at constant pressure, of the amount of gas which would occupy a volume of 1.0 cubic foot at a temperature of 60 degree Fahrenheit, saturated with water vapor and under a pressure equivalent to that of 30.00 inches of mercury at 32 degrees Fahrenheit, and under standard gravitational force (980.665 centimeters per second squared) with air of the same temperature and pressure as the gas, when the products of combustion are cooled to the initial temperature of the gas and air and when the water formed by combustion is condensed to the liquid state.

The text of §§ 2.56a(c)(1) and 2.56b(d)(1) reads as follows:

The Btu content of the natural gas used in computing this rate adjustment shall be the number of British thermal units (Btu) produced by the combustion, at constant pressure, of the amount of the gas which would occupy a volume of 1.0 cubic foot at a temperature of 60°F. saturated with water vapor and under a pressure equivalent to that of 30.00 inches of mercury at 32°F. and under standard gravitational force (980.665 centimeters per second squared) with air of the same temperature and pressure as the gas, when the products of combustion are cooled to the initial temperature of the gas and air and when the water formed by combustion is condensed to the liquid state.

fective for all first sales of natural gas made on or after December 1, 1978, the effective date of the interim rule.

With respect to the PGA issue, natural gas pipelines under the Commission's jurisdiction will be permitted to record any necessary retroactive payments in Account 191 ("Unrecovered purchase gas costs"). Such payments should be recorded as a subaccount of Account 191 or should be otherwise separately identified. The pipeline will be afforded the opportunity to demonstrate in its next PGA filing that the claimed amounts are correct and that rate treatment is appropriate for any claimed retroactive payments.

The Commission Orders:

The applications for rehearing of Order No. 93 and Natural's petition for rehearing of the Commission's order denying its petition for partial stay of Order No. 93 are denied. The applications for stay filed by Arkla and Transco are also denied. Order No. 93 is clarified as set forth above.

By the Commission.

[SEAL]

/s/ Kenneth F. Plumb
KENNETH F. PLUMB,
Secretary.

APPENDIX I

TECHNICAL CONSIDERATIONS

The Commission has examined, among the other matters discussed in this order, certain fundamental technical considerations pertaining to the Btu Rule. Of particular interest are:

- features related to the occurrence of water in natural gas;
- factors which cause variances in the water content of natural gas and attendant changes in the heating value of natural gas; and
- considerations related to the development of producer just and reasonable rates under the NGA and the degree of compatibility between those rates and the maximum lawful prices established under the NGPA.

The following discussion addresses some of the concerns expressed by the petitioners and helps explain the Commission's rationale in reaching its decision in Order No. 93 with respect to the Btu pricing issue.

Occurrence of Water in Natural Gas

It is important at the outset to recognize that the reasons for the occurrence of water in natural gas relate to expected and natural phenomena. Most geologic formations from which natural gas is produced are the results of fragmented materials or precipitates deposited in ageous environments (e.g., shallow seas, lakes, deltas, streams, etc.). Additionally, the organic material (plant and/or sea life) from which natural gas originated was also deposited and decomposed in ageous environments. Therefore, natural gas that has accumulated in or migrated to the reservoirs from which it is now produced has been, and in most instances still is, in contact with water (i.e. the chemical compound H_2O).

Because of the physical contact of natural gas with water, water is produced along with gas. Water may be present in produced natural gas as a free liquid (i.e., in a liquid phase) or as a vapor (i.e., in a gaseous phase). Most often it is present in produced gas as both a liquid and a vapor. Free liquid water interferes with production and transportation operations and is removed from the natural gas stream. Water vapor reduces the heating value of natural gas, and it is that feature which is central to the considerations in this order and in Order No. 93.

Variance in Water Vapor Content and Heating Value

The extent to which water in any given natural gas sample or natural gas stream exists or remains in a gaseous phase, as opposed to a liquid phase, depends upon the water vapor capacity of the gas. Water vapor capacity of gas is a function of the pressure and temperature to which the gas is subjected. Changes in the pressure and temperature of gas, and resulting changes in its water vapor capacity, can occur within the reservoir; during production, separation, and treating or conditioning operations; and during pipeline entry and transportation.

The relationships between water vapor capacity and temperature and pressure are clearly shown in the graph at the end of this appendix. It is important to understand that at any set of pressure and temperature conditions, gas has a specific water vapor capacity. Once that capacity is obtained, the gas is completely saturated with water vapor. If either pressure or temperature is changed, the water vapor capacity of the gas (i.e., its saturation limit) will change. The gas would then be capable of containing either more water vapor or less water vapor, depending upon the direction of change in pressure or temperature. (See graph.)

Water has no available heat energy. Unlike the hydrocarbon compounds in natural gas, it will not combine with oxygen and generate heat through combustion. The presence of water vapor molecules in natural gas displaces energy-producing hydrocarbon molecules and, therefore, reduces the effective heating value of the gas.

Order No. 93 addressed the water vapor/heating value relationship and, among other things, articulated the standard method for measuring the heating value of natural gas. Specifically, Order No. 93 established the "standard conditions" for measuring the number of British Thermal Units (Btu's) in one cubic foot of gas:

> ". . . the gas is saturated with water vapor at 60 degrees fahrenheit under a pressure equivalent to that of 30.00 inches of mercury at 32 degrees fahrenheit, under standard gravitational force (980.665 centimeters per second squared)."

In recognition of the fact that the conditions under which gas is actually delivered would vary widely and would likely be different from the standard conditions, Order No. 93 also stated that the heating value of gas determined at standard conditions (or other measurement conditions) must be converted to reflect the heating value at actual delivery conditions in order to properly price the gas.

The standard conditions established in Order No. 93 are based on long-standing, widely-used standards for natural gas measurement. Standards are necessary in natural gas measurement because of the chemical nature and physical behavior of natural gas. In any given natural gas system (i.e., sample, stream, etc.) the following essential relationships exist:

- Gas volume expands with increased temperatures;
- Gas volume shrinks with increased pressure;

- Gas capacity to absorb water vapor increases with higher temperature;
- Gas capacity to absorb water vapor decreases with higher pressure; and
- Gas heating value (i.e., MMBtu's per Mcf) decreases with higher water vapor content, and vice versa.

The standard measurement conditions cited in Order No. 93 recognize the above relationships and their interdependence. The standards, in effect, define both volume and water vapor content. Volume is defined by the prescribed temperature and pressure conditions. Water vapor content is defined as being that quantity of water vapor that would be present in the gas if the gas were fully saturated with water vapor at the defined standard temperature and pressure.

At the defined standard conditions, water-saturated gas will contain approximately 820 pounds of water vapor per million cubic feet of total gas. However, the standard conditions would actually exist in only a very limited number of gas sale-purchase transactions, i.e., only where pressure and temperature conditions at delivery are identical to the standard conditions (30 inches of mercury and 60° F) and where the gas at delivery is saturated with water vapor.[1] Because of contractual provisions, gas delivered to a pipeline will, by comparison, often contain only about seven pounds of water per mil-

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[1] In this regard, it should be noted that the standard pressure, 30 inches of mercury, is aproximately the same as atmospheric pressure. Local and regional variances from the 30-inch standard are caused by weather patterns and differences in elevation. Operating pressures near atmospheric pressure may occur on portions of some gas distribution systems, but the pressures encountered in most production and transportation operations greatly exceed atmospheric pressure.

lion cubic feet of total gas.[2] Water vapor in gas fully saturated with water, at the defined standard pressure and temperature, will occupy about 1.74 percent of the total gas volume, whereas, water vapor in gas containing seven pounds of water vapor per million cubic feet of gas will occupy only about 0.015 percent of the total gas volume. These relationships show that there is little comparability between the amount of water vapor contained in gas at most delivery conditions vis-a-vis the amount contained at the prescribed standard conditions.

Because water vapor displaces energy-producing hydrocarbon molecules, heating value (MMBtu's per Mcf) of natural gas varies inversely with water vapor content. The effect of reducing the water vapor content of natural gas from 820 pounds per MMcf to seven pounds per MMcf is an obvious increase in the heating value (i.e., MMBtu's per Mcf) of the gas stream.

Thus a significant disparity clearly exists between the heating value of gas at the standard conditions and its heating value at actual delivery conditions. The degree of disparity is dependent upon the actual delivery conditions (pressure and temperature). Given the collage of pressure and temperature conditions at which gas sale-purchase transactions occur, there is no known, uncontroverted correction factor that would have universal application for adjusting heating value determinations at the defined standard conditions to the heating value at actual delivery conditions.

Based on this analysis the Commission has stated that the heating value of gas determined at the prescribed standard conditions (or any other test conditions) must

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[2] It should be made clear that it is physically impossible under most delivery conditions for natural gas to contain the 820 pounds of water vapor per million cubic feet of total gas that is obtained at "standard conditions." Under most delivery conditions, the maximum amount of water vapor in gas will range from about 7 to 70 pounds per million cubic feet of total gas. (*See* graph.)

be adjusted to reflect the heating value of gas at actual delivery conditions, whatever those conditions are for a particular first sale.

Compatibility of NGA and NGPA Prices

There are several considerations that should be addressed relative to the correlation between the NGA volume-referenced prices and the NGPA energy-referenced prices. Direct correlation is frustrated by an inconsistency between the concept and methodology used to derive the NGA base prices and the concept and methodology underlying Btu adjustments applied to those base prices. The basis for this inconsistency is largely historic. Specific recognition of the inconsistency itself is necessary in order to obtain compatability between the NGA and NGPA pricing schemes.

The Btu adjustment procedure was originally adopted under the Federal Power Commission's (FPC's) in-line pricing system which was based on contract provisions predominant in the producing area. It was designed to encourage producers in certain areas to deliver high Btu gas for mixing with low Btu gas that could not otherwise be brought into the interstate market.[3] In deciding that Btu content should be reported at standard conditions, the FPC noted that this requirement conformed to the requirements of Form 2 and that it was accepted by the scientific community and the natural gas industry. The FPC also noted that the Btu adjustment procedures were actually part of the in-line, contract-pricing concept because they were routinely used in contracts upon which the in-line prices were based.

Later, the FPC established area rates which initially included a rate for "flowing gas" and a rate for "new gas." That pricing approach was later amended to develop a nationwide base price for "new gas;" still later

[3] *Texaco, Inc.*, Opinion 464, 33 F.P.C. 1228, 1235 (1965).

amendments were made to recognize the "vintage" of the gas. These producer base prices were established for natural gas volumes (Mcf at 14.73 psia an 60° F) delivered to a pipeline. Adjustments to the NGA volume-referenced base prices were permitted in order to recognize variance in the heating value (MMBtu's per Mcf) of gas and were based on the results of Btu measurements at standard conditions.[4] However, as with the in-line pricing methodology, no conversion was permitted to account for the heating value at actual delivery conditions.[5]

Throughout the area and nationwide rate proceedings establishing NGA producer prices, the FPC was dealing with costs and natural gas volumes reported by the industry. The reported costs were in dollars, and the reported volumes were either the quantities of natural gas (Mcf's) actually produced on oil and gas leases, in the case of "flowing gas," or the quantities of natural gas that would ultimately be produced from discovered reserves, in the case of "new gas."

In an overly simplified explanation, the base prices were the quotient obtained by dividing these costs by these volumes. The prices, in effect, represented the average revenue requirement (within the NGA's just and reasonable standard) for producing an "average Mcf" of gas and making it available for delivery to a pipeline. A

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[4] The first attempts by the FPC at providing for Btu adjustments to volume-referenced area rates had a so-called "Btu Gap." The base price prescribed was applicable to natural gas containing 1000 to 1050 Btu's per Mcf. Adjustments to the base price were made for gas below 1000 Btu's per Mcf and for gas above 1050 Btu's per Mcf. (Permian Basin Area Rate Proceedings Opinion 468 (34 FPC 159 at 223).) No adjustment was applicable for gas in the 1000 to 1050 Btu range. Later FPC action eliminated the Btu-Gap to provide for price adjustments to the NGA base prices for gas above and below 1000 Btu's per Mcf.

[5] The standard conditions used for determining Btu content during the NGA pricing era are essentially the same as those prescribed in Order No. 93.

cost-revenue balance was implicit in these rates. It should be emphasized, however, that the reported volumes were not adjusted for quality (Btu's or otherwise) prior to rate derivation. The reported volumes were at various pressure and temperature delivery conditions, which varied substantially from the 30 inches of mercury and 60° F standard pressure and temperature conditions. As such, the reported volumes would not contain the 820 pounds of water vapor per MMcf of total gas that exist at standard conditions. Rather, the reported volumes would typically contain approximately seven to seventy pounds of water vapor per MMcf. Therefore, the heating value per Mcf at delivery conditions would be significantly greater than the heating value per Mcf of the same gas if referenced to standard conditions.

In essence, then, imposition of the Btu adjustment procedure on the cost-revenue balancing scheme introduced a foreign element into the pricing methodology employed by the FPC in setting the base prices. That foreign element is the source of the present pricing controversy under the NGPA.

In order to have resolved this inconsistency for purposes of establishing a base price comparable on an energy-equivalent basis to volumes at standard conditions, the delivered volumes would have had to be decreased. The resulting base price would have been correspondingly increased. Subsequent Btu adjustments to the base price (i.e., the price per Mcf of 1 MMBtu per Mcf gas at standard conditions) would have resulted in pricing the gas essentially on an as-delivered-MMBtu basis.[6]

The effect of the failure to resolve this inconsistency is an understatement of the actual number of MMBtu's

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[6] In the alternative, the Btu adjustment could have been based on actual delivery conditions. *See* "Sample Computation Showing Lack of Direct Correlation Between Previously Established NGA Volume-Referenced Prices and NGPA Energy-Referenced Prices."

contained in each Mcf delivered to the buyer. With the relatively low gas prices of the past, the inconsistency apparently was acceptable for quality control and for pricing purposes to both the seller and the buyer.[7] However, the change under the NGPA to reliance on heat content (MMBtu's) of gas as a price determinant rather than a quality control adjustment to a volume-referenced base price, has created a controversy which can be traced to this inconsistency. Under the NGPA, prices are established for the quantity of heat energy (MMBtu's) involved in a first sale. The NGPA pricing structure makes no specific reference to volumes or volume measurement. (In actual practice, however, most gas involved in producer-pipeline transactions is still measured on a volumetric basis although it is now priced on an energy basis.) If gas is now to be priced on the basis of the heating energy actually delivered to a buyer, the former NGA adjustment procedures with respect to heating value are not technically correct for use in the energy-referenced pricing scheme. Those procedures evolved from the in-line pricing era, during which natural gas prices were based on contract provisions predominant in the producing area. They made sense for quality control purposes and for encouraging the delivery of high Btu gas. When carried forward to the area and national ratemaking methodologies, which abandoned the in-line, contract-referenced pricing concept, they created a basic technical inconsistency between the base prices and the Btu adjustments made to those base prices. Whatever previous usefulness may have derived for producer ratemaking purposes from the Btu adjustment procedures no longer exists. The procedures have now become a "vestigial organ" and are not an integral component of the NGPA pricing anatomy.

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[7] What support exists for the prescribed NGA Btu adjustment producer derives from its identity with provisions in most producer-pipeline contracts.

Conclusion

In addition to being technically (and legally) correct, the Btu measurement and pricing procedures should also be administratively efficient. The procedures described in Order No. 93 satisfy those tests. Therefore, to the extent that it is contractually permissible, the actual delivery conditions, whatever they are, should be recognized in determining the quantity of heat energy involved in a gas sales/ purchase transaction. Any other approach, as well as a downward adjustment of the maximum lawful prices, would not be technically correct and would likely result in administrative "nightmares" for regulatory agencies and for all segments of the natural gas industry.

Sample Computation Showing Lack of Direct Correlation Between Previously Established NGA Volume-Referenced Prices and NGPA Energy-Referenced Prices

- Assume cash flow of $1 million.
- Assume reported volumes are 1 million Mcf.
- Assume gas is "dry" (i.e., contains no water vapor) and has a heating value of 1 MMBtu per Mcf.
- The correct price under the NGPA pricing procedures should be $1.00 per MMBtu of gas actually delivered.

However, application of the NGA base-price Btu adjustment procedure would produce the following results:

The heating value of the gas would be converted from actual delivery conditions to "standard conditions" and would, therefore, contain:

1 MMBtu/Mcf × (100.00% Total Gas − 1.74% water vapor) = 0.9826 MMBtu/Mcf

The revenues generated as a result of this Btu adjustment would be determined as follows:

0.9826 MMBtu/Mcf×1 million Mcf
×$1.00/MMBtu=
982,600 MMBtu×$1.00/MMBtu=$982,600

In order to use the NGA base-price Btu adjustment procedure and generate a cash flow equivalent to $1,000,000, the reported volumes would have to be adjusted downward so as to produce a higher "base rate." The adjusted base rate ("B") needed to maintain revenues would be computed as follows:

$$\$1{,}000{,}000 = 0.9826 \text{ MMBtu/Mcf} \times 1 \text{ million Mcf} \times B$$

$$B = \frac{\$1{,}000{,}000}{0.9826 \text{ MMBtu/Mcf} \times 1 \text{ million Mcf}}$$

$$B = \frac{\$1{,}000{,}000}{982{,}600 \text{ MMBtu}}$$

$$B = \$1.017/\text{MMBtu}$$

The downward adjusted volumes needed to derive the $1.0177 per MMBtu rate would be computed as follows:

1 Mcf of gas at actual delivery conditions contains 1 MMBtu. If the gas were converted to standard conditions the same Mcf would contain 0.9826 MMBtu's because water vapor would occupy 1.74% of the total gas volume. The "energy equivalent" volumes at actual delivery conditions would, therefore, have to be reduced by 1.74%:

1 million Mcf×(100.00%−1.74%)=982,600 Mcf

The adjusted base rate ("B") would result from the following:

$$B = \frac{\$1{,}000{,}000}{982{,}600 \text{ Mcf} \times (1 \text{ MMBtu/Mcf})}$$

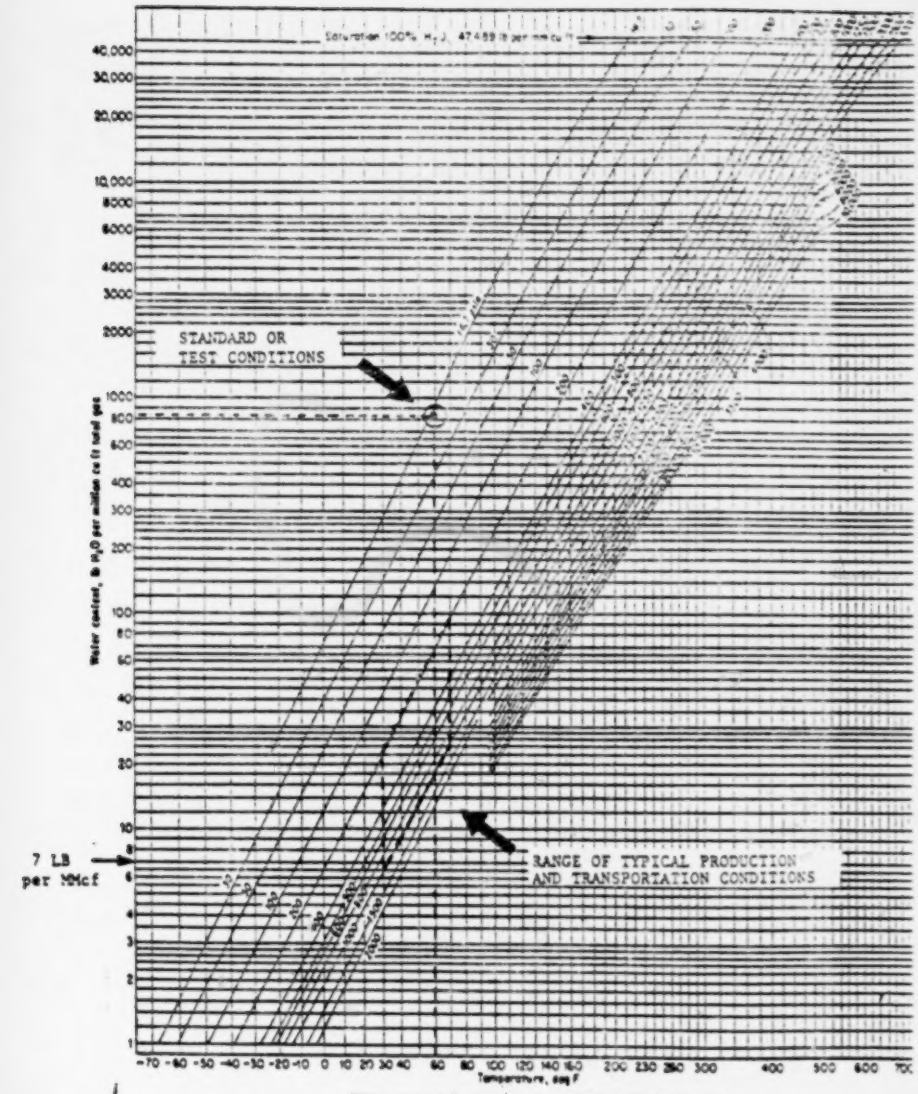
$$B = \$1.0177/\text{MMBtu}$$

The revenues generated under this procedure would be as follows:

0.9826 MMBtu/Mcf×1 million Mcf
×$1.0177/MMBtu=
982,600 MMBtu×$1.0177/MMBtu=$1,000,000

This example demonstrates that in order to obtain correct pricing for MMBtu's actually delivered, using the NGA base-price Btu adjustment procedures, volumes reported at actual delivery conditions (here assumed to contain no water vapor) would have to be reduced prior to deriving a "base rate" per Mcf. If this is not done, revenues would be less than the requisite cash flow. *Note*, however, that this is only an explanatory computation. The same correct result is obtained under the NGPA pricing procedures if the NGA per Mcf base price is retained and expressed on a per-MMBtu basis and the heating value of the gas is determined based on actual delivery conditions. In this example:

1 MMBtu/Mcf×1 million Mcf
×$1.00/MMBtu=$1,000,000



Water content of natural gas in equilibrium with liquid water.

Ref: Adapted from Katz, Cornell, Kobayashi, Poettmann, Vary, Elenbaas and Weinaug, Handbook of Natural Gas Engineering (McGraw-Hill Book Company, Inc., New York, Toronto, London, 1959). Reprinted with permission © 1959 McGraw-Hill Book Company, Inc.

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UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: C. M. Butler III, Chairman;
Matthew Holden, Jr., and
J. David Hughes.

Docket No. RM80-33

FINAL RULES FOR PART 270,
SUBPART B, SECTIONS 270.201,
270.202, and 270.204

ORDER DENYING APPLICATIONS FOR REHEARING OF ORDER NO. 93-A AND LIMITED STAY OF ORDER NOS. 93 AND 93-A

(Issued July 30, 1981)

On April 24, 1981, the Commission issued Order No. 93-A (Docket No. RM80-33; 46 *Fed. Reg.* 24537; May 1, 1981) denying rehearing and clarifying Order No. 93 (45 *Fed. Reg.* 49077; July 23, 1980). On May 26, 1981, Associated Gas Distributors (AGD) and Lone Star Gas Company (Lone Star) filed, separately, applications for rehearing of Order No. 93-A. Further, on June 23, 1981, Lone Star filed an application for a limited stay of Order Nos. 93 and 93-A. By this order those applications are denied.

I. BACKGROUND

Order No. 93 amended and issued as final rules the interim regulations [1] relating to first sales of natural gas

[1] The interim rule read as follows:

§ 270.204 *Btu content per unit volume of natural gas.*

For purposes of determining the number of Btu's per unit volume of natural gas, the Btu content of one cubic foot of

that are resales and the standard for determining the Btu content of natural gas. Several applications contested that part of the rule (contained in § 270.204) establishing the standard for determining the Btu content of gas (Btu rule).

With regard to the Btu rule, in Order No. 93 the Commission responded to the comments on the interim rule, interpreted the interim rule, and modified the language of the final rule to more clearly reflect that interpretation. Specifically, it stated that measurement of the Btu content of gas must reflect the actual condition of the gas, and, therefore, the actual Btu content of the gas on delivery. This rule differs from the regulations which implemented the Natural Gas Act (15 U.S.C. §§ 717-717 (w)) in that the just and reasonable rates prescribed under the Natural Gas Act were based on the number of Mcf's delivered and included a quality adjustment determined by the number of MMBtu's measured at standard (saturated) conditions. Measurement at the prescribed standard conditions consistently under-stated the Btu content of the gas on delivery.

The Commission's position under the Natural Gas Policy Act of 1978 (NGPA), 15 U.S.C. §§ 3301-3342, explained in both Order No. 93 and Order No. 93-A, applies the maximum lawful prices prescribed by the NGPA to the number of MMBtu's, rather than Mcf's, delivered

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natural gas is the number of Btu's produced by the combustion, at constant pressure, of the amount of gas which would occupy a volume of 1.0 cubic foot at a temperature of 60 degrees Fahrenheit, saturated with water vapor and under a pressure equivalent to that of 30.00 inches of mercury at 32 degrees Fahrenheit, and under standard gravitational force (980.665 centimeters per second squared) with air of the same temperature and pressure as the gas, when the water formed by combustion is condensed to the liquid state. (43 Fed. Reg. 56448; December 1, 1978)

in a first sale. The Btu rule, as amended by Order No. 93, became effective as a final rule August 18, 1980.[2]

In addition to denying rehearing of Order No. 93, Order No. 93-A clarified the Btu rule by presenting a full explanation of its rationale for adopting a Btu rule that reflects the actual condition of the gas on delivery. The Commission again stated that the interim rule, as well as the final rule, permitted the maximum lawful price for first sales of natural gas to be determined on the basis of the number of Btu's actually delivered. The clarification, therefore, made the interpretation effective for all first sales of natural gas made on or after December 1, 1978 (the effective date of the interim rule).

II. APPLICATIONS FOR REHEARING

Both AGD and Lone Star challenged the retroactive effective date of the clarification expressed in Order No. 93-A. In Order No. 93 the Commission clearly expressed its interpretation of the interim Btu rule:

> Several comments noted that § 270.204 provides that Btu content must be measured on a "saturated

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[2] The final rule reads as follows:

§ 270.204 *Btu content per cubic foot of natural gas.*

(a) *Measurement.* The Btu content of one cubic foot of natural gas under the standard conditions specified in paragraph (b) of this section is the number of Btu's produced by the complete combustion of such cubic foot of gas, at constant pressure with air of the same temperature and pressure as the gas, when the products of combustion are cooled to the initial temperature of the gas and air and when the water formed by such combustion is condensed to a liquid state.

(b) *Standard conditions.* The standard conditions for purposes of paragraph (a) of this section are as follows: The gas is saturated with water vapor at 60 degrees Fahrenheit under a pressure equivalent to that of 30.00 inches of mercury at 32 degrees Fahrenheit, under standard gravitational force (980.665 centimeters per second squared).

with water vapor" basis rather than on the basis of the actual water vapor content of the gas delivered. The comments asserted that under this rule the seller would be paid for less Btu's than would actually be delivered if the gas were sold on a dry (unsaturated) basis.

This assertion is erroneous. Section 270.204 merely describes the test standard for expressing the number of Btu's contained in a cubic foot of gas under certain conditions. Under this standard, the heat value is expressed as the number of Btu's per cubic foot of gas "saturated with water vapor." The Commission is aware that the water vapor content or pressure of the gas when tested may be different than described in this standard, and may also be different than the conditions that obtain when the gas is delivered.

Therefore, the results obtained under test conditions, be they those in the rule or others, must be converted to figures that reflect the actual condition of the gas on delivery in order to properly price the gas. (45 *Fed. Reg.* at 49080.)

That interpretation is clearly consistent with the clarification expressed in Order No. 93-A. Accordingly, Order No. 93-A was made effective as of December 1, 1978, the effective date of the interim rule. Lone Star's and AGD's assertion that Order No. 93-A effected a rule retroactively is without merit.

Lone Star challenged the merits of the Commission's decision, asserting that the Btu rule contradicts past Commission and industry practice and the intent of Congress. These issues were raised in the application to rehear Order No. 93. In Order No. 93-A the Commission fully discussed these issues and denied the applications for rehearing. For the reasons discussed in Order No. 93-A, Lone Star's application is denied.

III. APPLICATION FOR LIMITED STAY

On June 23, 1981, Lone Star also filed an application seeking a stay of the retroactive application of § 270.204 as interpreted by Order Nos. 93 and 93-A. Specifically Lone Star seeks stay of the orders to the extent they require Lone Star to make retroactive adjustment of the prices it paid producers for gas purchases prior to April 24, 1981, the date Order No. 93-A was issued.

The application for a limited stay of Order Nos. 93 and 93-A, pending judicial review, is denied.

THE COMMISSION ORDERS:

(1) The applications for rehearing of Order No. 93-A filed by Associated Gas Distributors and Lone Star Gas Company are denied.

(2) The application of Lone Star Gas Company for a limited stay of Order Nos. 93 and 93-A, pending judicial review, is denied.

By the Commission.

[SEAL]

/s/ Kenneth F. Plumb
KENNETH F. PLUMB,
Secretary.

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: C. M. Butler, III, Chairman;
Georgiana Sheldon,
Matthew Holden, Jr., and
J. David Hughes.

Docket No. RM80-33

FINAL RULES FOR PART 270,
SUBPART B, SECTIONS 270.201,
270.202, AND 270.204

ORDER VACATING ORDER DENYING REHEARING OF ORDER NO. 93-A AND LIMITED STAY OF ORDER NOS. 93 AND 93-A

(Issued August 20, 1981)

For the reasons set forth in "Order Granting Partial Stay of Order Nos. 93 and 93-A Pending Further Order" issued today, we hereby vacate the following aspects of our order of July 30, 1981 entered in this docket:

1) The denial of rehearing as to the effective date of the standard prescribed for measuring the Btu content of natural gas in calculating the maximum lawful prices under the Natural Gas Policy Act of 1978 (15 U.S.C. §§ 3301-3432); and

2) The denial of the application of Lone Star Gas Company for a partial stay.

The Commission Orders:

Subject to the approval of the United States Court of Appeals of the District of Columbia Circuit, the

order of July 30, 1981, entered in the above docket is vacated in the respects described above.

By the Commission.

[SEAL]

/s/ Kenneth F. Plumb
KENNETH F. PLUMB,
Secretary.

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: C. M. Butler, III, Chairman;
Georgiana Sheldon,
Matthew Holden, Jr., and
J. David Hughes.

Docket No. RM80-33

FINAL RULES FOR PART 270,
SUBPART B, SECTIONS 270.201,
270.202, AND 270.204

ORDER GRANTING PARTIAL STAY OF ORDER NOS. 93 AND 93-A PENDING FURTHER ORDER

(Issued August 20, 1981)

On July 16, 1980, the Commission issued Order No. 93 (Docket No. RM80-33; 45 *Fed. Reg.* 49077; July 23, 1980) amending and issuing as final rules the regulation in 18 C.F.R. § 270.204 relating to the standard for determining the Btu content of natural gas. On April 24, 1981, the Commission issued Order No. 93-A, entitled "Order Denying Rehearing and Clarifying Order No. 93" (46 *Fed. Reg.* 24537; May 1, 1981). On July 22, 1981, El Paso Natural Gas Company filed a petition requesting full or partial stay of Order Nos. 93 and 93-A.

Order No. 93-A stated that the measuring standard prescribed in Order No. 93 took effect on December 1, 1978. We wish to reconsider that conclusion. Many pipelines have not yet paid all sums which would be due on the basis of that effective date. To that extent, we wish

to preserve the status quo pending reconsideration of the question of the effective date.[1]

The Commission Orders:

Order Nos. 93 and 93-A are stayed, pending further order, insofar as they concluded that the standard they prescribed for determining Btu content of natural gas was in effect from December 1, 1978, to April 24, 1981 (the date Order No. 93-A was issued). This order is subject to the approval of the United States Court of Appeals for the District of Columbia Circuit.

By the Commission.

[SEAL]

/s/ Kenneth F. Plumb
KENNETH F. PLUMB,
Secretary.

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[1] Should this reconsideration produce a different conclusion as to the effective date, we will make appropriate adjustments to relieve those who already paid in whole or in part.

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: C. M. Butler, III, Chairman;
J. David Hughes and
A. G. Sousa.

Docket No. RM80-33

FINAL RULES FOR PART 270,
SUBPART B, SECTIONS 270.201,
270.202, AND 270.204

ORDER VACATING PARTIAL STAY AND AMENDING REGULATIONS

(Issued December 24, 1981)

On August 20, 1981, the Federal Energy Regulatory Commission (Commission) granted a partial stay of the December 1, 1978, effective date of the Btu rule (18 C.F.R. § 270.204), pending further order, for the period December 1, 1978, to April 24, 1981. The Btu rule prescribes the standard for determining the Btu content of natural gas in calculating maximum lawful prices under the Natural Gas Policy Act of 1978 (15 U.S.C. §§ 3301-3432) (NGPA).

The Commission has reconsidered the effective date of the Btu rule. For the reasons discussed herein and previously stated in Order Nos. 93 and 93-A, the Commission reaffirms the December 1, 1978, effective date. Accordingly, the partial stay of the effective date is vacated, and, effective December 1, 1978, maximum lawful prices for first sales of natural gas are to be determined by the actual Btu's delivered. In addition, § 270.204 of the Commission's regulations is clarified by adding a new para-

graph stating that the maximum lawful price for any first sale is applied to the Btu's actually delivered.[1]

I. BACKGROUND

The NGPA was signed into law on November 9, 1978. On November 28, 1978, the Commission issued interim regulations, effective December 1, 1978, to implement the NGPA. One of the interim regulations was § 270.204. That section described the standard test conditions for determining the Btu content of a unit volume of natural gas.

On July 16, 1980, the Commission issued Order No. 93 (45 *Fed. Reg.* 49077, July 23, 1980) in the instant docket which, *inter alia*, amended and issued in final form the interim regulation in § 270.204. In response to comments questioning the relationship of the interim regulation to determination of maximum lawful prices under the NGPA, the Commission clarified that the maximum lawful price for first sale of natural gas is determined by adjusting the results obtained under the test conditions set forth in § 270.204 to reflect the actual Btu content of the gas at delivery conditions (Btu rule). This interpretation applied to both the interim regulation and the final rule.

On April 24, 1981, the Commission issued Order No. 93-A (46 *Fed. Reg.* 24537, May 1, 1981) which denied rehearing. The order explained in more detail the Commission's rationale for adopting the Btu rule. The Commission again stated that under the interim rule, effective December 1, 1978, as well as the final rule, the maximum lawful price for first sales of natural gas is to be

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[1] Persons allegedly aggrieved by the Commission's decision have previously sought, and been denied, rehearing on the effective date issue. This order is essentially the result of a reconsideration, on the Commission's own motion, of the denial of rehearing. Because the Commission merely reaffirms its prior orders, rehearing of this order is not a prerequisite for judicial review.

determined on the basis of the number of Btu's actually delivered and that the test results obtained pursuant to § 270.204 are to be adjusted accordingly.

Subsequently, several applications for rehearing and stay of Order No. 93-A were filed. The applications objected to the December 1, 1978, effective date of the Btu rule. On July 30, 1981, the Commission denied the petitions for rehearing and stay.

On August 20, 1981, the Commission vacated its July 30 order denying rehearing and stay and granted a stay of the effectiveness of the Btu rule for the period December 1, 1978, to April 24, 1981. The Commission stated therein that it would reconsider the December 1, 1978, effective date.

Numerous petitions for review had been filed in the United States Court of Appeals for the District of Columbia Circuit after rehearing was denied in Order No. 93-A and the July 30 order. For this reason, the order vacating the order denying rehearing and granting a partial stay was made subject to the Court's approval and the Commission sought remand of the record. On September 17, 1981, the court remanded the record.[2]

II. COMMISSION DECISION

In implementing the NGPA, the Commission has required that maximum lawful prices "per MMBtu" be determined on the basis of the MMBtu's actually delivered in a first sale. That requirement is not at issue here. The only question now before the Commission is whether the December 1, 1978, effective date is appropriate. The Commission believes that it is.

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[2] This order resolves the issue before the Commission. Therefore, the Solicitor is directed to transmit a copy of this order to the United States Court of Appeals for the District of Columbia Circuit.

Prior to the Commission's clarification in Order No. 93 of the relationship of the test conditions outlined in § 270.204 to the determination of maximum lawful prices, the record indicates there was some confusion in the natural gas industry on the issue of whether the test results must be adjusted in order to determine maximum lawful prices. Some producers apparently demanded that maximum lawful prices be applied to the actual Btu's delivered in a first sale.[3] On the other hand, some pipelines insisted that maximum lawful prices be applied to the Btu's determined under the standard conditions described in § 270.204, without further adjustment to reflect actual delivery conditions, which is similar to the method used to determine just and reasonable rates under the Natural Gas Act (15 U.S.C. §§ 717-717(w)). Thus, it does not appear from a review of the record that there was an interpretation different from the Commission's that was uniformly adopted throughout the industry. Under these circumstances, the Commission is not persuaded to change the December 1, 1978, effective date of the Btu rule, so as to impose a different interpretation for the period prior to the issuance of Order No. 93.

The Commission emphasizes, as it did in Order No. 93-A, that the Btu rule does not require that the industry change its measurement or pricing practices. Application of the Btu rule to a first sale merely determines the maximum lawful price that can be charged for natural gas under the NGPA. The rule neither alters the method called for in the contract for measuring the Btu content of the gas, nor requires payment for a price different from that provided for by the contract, as long as it is at or below the applicable maximum lawful price.

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[3] *See, e.g.*, Joint Supplemental Comments of Indicated Producers, filed January 31, 1979, at 6; Application of Indicated Producers for Rehearing, filed February 2, 1979, at 13.

III. AMENDMENT to § 270.204

The Commission is amending the language of § 270.204 of its regulations by adding a new paragraph (c) to reflect the Commission's interpretation of the NGPA and its regulations that the maximum lawful price prescribed under the NGPA for any first sale applies to the Btu's actually delivered in that sale.

In accordance with section 553(b) and (c) of the Administrative Procedure Act (5 U.S.C. § 553) (APA), the Commission finds that public notice and comment are unnecessary, because this amendment is merely a clarification and effects no substantive change in the regulations. For the same reasons, the Commission, in accordance with section 553(d) of the APA, makes the amendment effective December 1, 1978, the effective date of the interim regulation.

The Commission orders:

For the reasons set forth above, the Commission orders:

(1) the partial stay of the Btu rule for the period December 1, 1978, to April 24, 1981, is vacated; and

(2) § 270.204 of Subpart B, Chapter I of Title 18, Code of Federal Regulations is amended as set forth below, effective December 1, 1978.

(Natural Gas Policy Act of 1978, Pub. L. No. 95-621, 92 Stat. 3350, 15 U.S.C. §§ 3301-3432.)

By the Commission.

[SEAL]

/s/ Kenneth F. Plumb
KENNETH F. PLUMB,
Secretary.

Section 270.204 is amended by adding a new paragraph (c) to read as follows:

§ 270.204 *Btu content per cubic foot of natural gas*

* * * *

(c) *Application of the maximum lawful price.* The maximum lawful price prescribed by the NGPA and this part for any first sale of natural gas applies to the Btu's actually delivered in that first sale.

APPENDIX C

TITLE 18—CONSERVATION OF POWER AND WATER RESOURCES

CHAPTER I—FEDERAL ENERGY REGULATORY COMMISSION

[DOCKET NO. RM79-3]

SUBCHAPTER A—GENERAL RULES

PART 2—GENERAL POLICY AND INTERPRETATIONS

SUBCHAPTER E—REGULATIONS UNDER THE NATURAL GAS ACT

PART 157—APPLICATIONS FOR CERTIFICATES OF PUBLIC CONVENIENCE AND NECESSITY AND ORDERS PERMITTING AND APPROVING ABANDONMENT UNDER SECTION 7 OF THE NATURAL GAS ACT

SUBCHAPTER H—REGULATION OF NATURAL GAS SALES UNDER THE NATURAL GAS POLICY ACT OF 1978

PART 270—RULES GENERALLY APPLICABLE TO REGULATED SALES OF NATURAL GAS

PART 271—CEILING PRICES

PART 273—COLLECTION AUTHORITY; REFUNDS

PART 274—DETERMINATIONS BY JURISDICTIONAL AGENCIES

PART 275—COMMISSION DETERMINATIONS AND COMMISSION REVIEW OF JURISDICTIONAL AGENCY DETERMINATIONS

PART 276—REPORTS

SUBCHAPTER I—OTHER REGULATIONS UNDER THE NATURAL GAS POLICY ACT OF 1978

PART 284—CERTAIN SALES AND TRANSPORTATION OF NATURAL GAS

INTERIM REGULATIONS IMPLEMENTING THE NATURAL GAS POLICY ACT OF 1978

AGENCY: Federal Energy Regulatory Commission.

ACTION: Interim Regulations.

SUMMARY: The Natural Gas Policy Act of 1978 (NGPA), enacted November 9, 1978, takes effect with respect to certain first sales of natural gas delivered on or after December 1, 1978. The new statutory provisions relating to pricing of natural gas and other issues must, therefore, be implemented by regulation by that date. These regulations implement certain provisions of the NGPA, and are issued as interim regulations.

PUBLIC HEARINGS: Dates and locations to be announced.

DATE: Written comments by January 31, 1979, except as otherwise noted.

EFFECTIVE DATE: December 1, 1978

ADDRESS: Office of the Secretary, Federal Energy Regulatory Commission, 825 North Capitol Street, N.E., Washington, D.C. 20426 (Reference Docket No. RM79-3)

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I. INTRODUCTION

On November 9, 1978, the Natural Gas Policy Act of 1978 (NGPA) was signed into law. By passage of the NGPA, Congress has mandated a new legislative framework for the regulation of most facets of the natural gas industry. The new law affects sales, transmission and distribution of natural gas. The previously controlling federal regulatory statute, the Natural Gas Act (NGA) has in many respects been limited, replaced or superseded by the NGPA, although it continues to be of significance with respect to gas previously dedicated to interstate commerce.

A primary effect of the NGPA is the substitution of a series of specific statutory maximum price levels applicable to discrete types of "first sales" of natural gas for the previously established system of price regulation of interstate sales of natural gas which had been grounded in a cost-based methodology. An important distinction between producer regulation under the NGA and the NGPA is the expansion of the Federal Energy Regulatory Commission's (Commission) jurisdictional scope to encompass not only sales made in interstate commerce but in intrastate commerce as well. Under the NGPA, all first sales of natural gas are controlled by the maximum statutory ceiling rates and as a result, it is unlawful for any person to sell natural gas at a price in excess of the statutory maximum regardless of whether the sale occurs in the inter- or intrastate market.

The Commission wishes to call specific attention to the provisions of section 101(b)(9) of the NGPA. The Congress, by that provision, emphasizes and makes clear that the maximum lawful prices under the NGPA are *ceiling* prices and do not supersede or nullify the effectiveness of any contractual agreement to pay a lower price. Therefore, the Commisison cautions producers not to assume entitlement to any NGPA ceiling price which is higher than their contract prices.

The Commisison is directed to administer essentially all of the NGPA and is authorized to perform any and all acts and to prescribe and issue such rules and orders as it finds necessary or appropriate to carry out its functions under the NGPA. On November 13, 1978, the Commission proposed interim regulations as the first step in implementing the NGPA. These interim regulations, contained in this notice, mark the second step in carrying out the basic responsibilities for implementation and administration of the Act and provide a mechanism for transition from the NGA regulating regime to the NGPA scheme.

The NGPA is divided into six titles:

I. Pricing

A. Price Controls Applicable to Sales of Natural Gas

B. Decontrol of Certain Natural Gas Prices

II. Incremental Pricing

III. Additional Authorities and Requirements

A. Emergency Authorities

B. Other Authorities and Requirements

IV. Natural Gas Curtailment Policies

V. Administration, Enforcement, and Review

VI. Coordination with the Natural Gas Act, Effect on State Laws

The interim regulations prescribed here do not implement all titles under the NGPA. Rather, the regulations propose to deal with those areas demanding the most expeditious treatment.

This first group of regulations is designed to set in motion the new scheme for pricing of first sales of natural

gas and to provide mechanisms for implementation of provisions of the NGPA covering certain arrangements for transportation of natural gas. However, before setting out in detail a full description of the specific regulations proposed, a summary of the most salient features of the NGPA, the effect on regulation under the NGA, and a capsule description of the implementing regulations and corollary modifications of regulations under the NGA, may be useful.

THE LEGISLATIVE SCHEME OF THE NGPA

The nature and scope of Commission regulation of producer sales under the NGPA has been substantially transformed from utility-type regulation of a limited market to what is essentially price regulation of an entire national market. Under the scheme set up the NGPA, there exist two major categories of first sales: those requiring a prior determination of eligibility to be made by a jurisdictional federal or state agency (within the meaning of the NGPA) before collection of the maximum lawful price and those not explicitly requiring such a determination. A decision as to whether a first sale falls into a category requiring a determination is fundamental. A decision to seek a determination triggers quite different regulatory consequences than a decision not to seek a determination.

Although under certain provisions the Commission may be called upon to return to the cost-based, just and reasonable methodology within the meaning of the NGA in establishing rates in excess of the NGPA ceiling prices, the basic administration of the pricing provisions of the NGPA will be undertaken from an entirely different perspective. The Commission will no longer inquire into producer costs or set permissible rates of return for producers. Instead, the Commission's focus will center on whether geological information, production history, field records, prior contractual relationships and information

of a similar nature support the categorization for pricing purposes claimed by producers.

Another crucial factor in anticipating what regulatory treatment will be accorded producer sales of natural gas is whether gas is "committed or dedicated" for purposes of NGA regulation. The limitations on NGA regulation as a result of enactment of the NGPA will be addressed in another section of this preamble. However, the distinction between gas which is deemed to be subject to continuing regulation under the NGA and gas which falls solely within the NGPA regulatory format is significant and affects both pricing and nonpricing regulation of producer matters.

For categories of gas requiring a prior determination by a federal or state agency, the Commission's function is more in the nature of an appellate body, reviewing, on a substantial evidence basis, the factual determinations of the appropriate jurisdictional agency with the right of disapproval in the event the initial determination is not adequately substantiated. The Commission rules reflect this role and prescribe the basic and minimum factual foundation necessary to meet its review responsibilities without directly interposing the Commission into the procedural functioning of the jurisdictional agency. The review process of initial determinations begins when notice is received of a jurisdictional agency's determination with the appropriate supporting material specified in Part 274 of the proposed regulations. In the absence of a reversal, the determination of the jurisdictional agency becomes final and no longer subject to review unless based on any untrue statement of material fact or upon any omission of material fact which omission was misleading.

Categories of first sales explicitly requiring that a determination as to qualification to collect the maximum lawful price be made by either a jurisdictional federal or state agency are:

—section 102 which sets a maximum lawful price for for first sales of new natural gas (gas produced from a new lease on the Outer Continental Shelf (OCS) or certain new onshore wells) and gas produced from any old OCS lease which was from a reservoir discovered after July 27, 1976;

—Section 103 which sets a maximum price for first sales of new onshore production wells;

—Section 107 which sets a maximum lawful price for first sales of high-cost natural gas including gas produced from geopressurized brine, coal seams, Devonian shale or gas produced under other conditions the FERC determines to present "extraordinary" risks or costs; and

—Section 108 which sets the maximum lawful price for first sales of stripper well natural gas.

An essential element in the regulatory system established with respect to categories requiring a prior determination is the provision for interim collection procedures by producers awaiting a final determination or the outcome of a review of such determination. The Commission has a concomitant power to require refunds from the producer if the gas eventually qualifies for a lower price. Section 503(e) sets out this collection and refunding procedure.

Part 273 of the regulations states the prerequisites for interim collection. First, the Commission has established a "transitional rule" to permit the collection by producers of the section 109 price if a producer files for a determination by March 1, 1979. Additional rules are established for interim collection pending and following a state or federal agency determination.

Those first sales of natural gas not requiring a prior determination to be made by a jurisdictional federal or state agency are tied to previously existing contractually

set prices or price levels established by the Federal Power Commission or this Commission. First sales not requiring a prior determination under the NGPA are:

—section 104 which incorporates by reference the just and reasonable rates established under the NGA for first sales of gas committed or dedicated to interstate commerce on the day before the date of enactment of the NGPA;

—section 105 which establishes maximum lawful prices for first sales under existing contracts of natural gas not previously committed or dedicated to interstate commerce;

—section 106 which establishes maximum lawful prices for first sales under interstate and intrastate rollover contracts; and

—section 109 which establishes the maximum lawful price for first sales of natural gas from the Prudhoe Bay in Alaska and categories of gas not otherwise covered by other sections of the NGPA.

The Commisison has general administrative and enforcement authority under the NGPA and the NGA to order refunds in cases where the maximum lawful price level has been improperly exceeded.

EFFECT OF THE NGPA UPON CONTINUED NGA REGULATION

Natural gas which remains committed or dedicated to interstate commerce on the day before the date of enactment of the NPGA, or which is not specifically exempted from the jurisdictional consequences of commitment or dedication by the NGPA, remains subject to all the non-price regulatory requirements of the NGA. An important aspect of continued NGA regulation is the requirement that a producer file an abandonment application with the FERC pursuant to section 7(b) of the NGA before termi-

nating service to the interstate market or before abandonment of facilities used to render interstate service. Additionally, although price regulation of first sales by producers of gas committed or dedicated is now governed by the NGPA, sections 104 and 106(a) are grounded in previously established rates under the NGA. As a result, producers wishing to establish their right to collect under these sections will be required to make a filing under their rate schedules under the NGA. The Commission has amended its previously existing filing requirements to provide new procedures governing these rate increase filings.

If gas is not committed or dedicated to interstate commerce as defined in section 2(18) or is exempted from the jurisdiction of the NGA under section 601(a)(1)(B) as high cost natural gas, new natural gas, or natural gas produced from any new onshore production well, the prior framework of utility-type regulation under the NGA no longer applies.

If natural gas sales are freed from the requirements of the NGA, several adjuncts to NGA regulation are obviated. First, there is no longer any necessity for a producer to seek certification of the sale as serving the public convenience and necessity. The replacement for this requirement under the NGPA is limited to the prior determination mechanism, where applicable, and the pricing limits established in the NGPA. New sales of such gas in interstate commerce no longer require certification as a prerequisite to commencement of deliveries. Nor does the requirement for abandonment authorization before termination of deliveries of natural gas exist with respect to natural gas no longer subject to NGA regulation. In the case of first sales of natural gas not previously committed or dedicated to interstate commerce or exempted from NGA regulation, tariff filings and rate increase applications are dispensed with. (Of course, specific requirements for filing to establish the right to col-

lect the maximum lawful price levels exist under the regulations and annual reporting will be required under the NGPA in many instances. However, the nature of these filings, which are in many cases one-time notification type filings is quite different from the rate filings previously required under the NGA.)

For natural gas which on the date of enactment was committed or dedicated but which is exempt from the NGA under section 601(a)(1) of the NGPA, there are substitute mechanisms for NGA section 7(b) abandonment authorization. These substitute provisions, intended to provide a degree of certainty to purchasers dependent upon a predictable natural gas supply, are found in section 315 of the NGPA. The Commission has not attempted to implement these sections in the initial implementing regulations. It is our intent to do so in the near future. That section gives the Commission dual authority to establish by rule or order the minimum duration of any contract (other than an existing contract) for the purchase of natural gas and to require by rule the right of first refusal with respect to any gas committed or dedicated to interstate commerce before the date of enactment if such gas is high cost gas, new natural gas or natural gas produced from any new, onshore production well.

Indirectly, NGA regulation is affected by the operation of section 601(b) and (c) of the NGPA. Section 601(b) provides that any amount paid in any first sale of natural gas shall be deemed to be just and reasonable if such amount does not exceed the maximum lawful ceilings established by the NGPA or if there is no maximum lawful price applicable by reason of elimination of price controls. Section 601(c), the guaranteed pass-through provision, states that the Commission may not deny, or condition, the grant of any certificate under section 7 of the NGA based upon the amount paid in any sale of natural gas if the amount paid meets the stand-

ards of section 601(b) and is, therefore, by statutory fiat, just and reasonable. Additionally, the Commission may only deny the recovery by any interstate pipeline of any amount paid with respect to the purchase of natural gas under section 601(b) to the extent the Commission determines that the amount paid was excessive due to fraud, abuse, or similar grounds.

Finally, included in the implementing regulations are provisions covering certain transportation arrangements by both interstate and intrastate pipelines. Provision is made for intrastate pipeline sales and for the assignment of natural gas excess to their requirements. Also, the Commission has revised its regulations previously applicable to emergency transactions and revised the procedure and the standards for emergency sales of natural gas for this winter's heating season.

GENERAL OUTLINE OF IMPLEMENTING REGULATIONS

The interim regulations add two new subchapters to the Commission's regulations in Chapter 1 of Title 18. New Subchapter H (Parts 270 through 276) contains the new producer regulations under the NGPA. Part 270 sets forth general rules applicable to the entire subchapter. Maximum lawful prices under NGPA sections 102 through 109 are implemented in Part 271. Part 273 provides for interim collections and refunds, while determinations of eligibility by state and federal agencies and Commission review of those determinations are provided for under Parts 274 and 275. Finally, Part 276 covers reports.

* * * *

II. SUMMARY OF PROPOSED REGULATIONS

PART 270

Part 270 prescribes rules and definitions that apply to Subchapter H. Subpart A contains the general rules

and definitions, and Subpart B contains special rules which relate to sales made under particular conditions.

• • • •

Section 270.102 contains definitions. Paragraph (a) provides that unless further defined, terms defined in the NGPA have the same meaning for purposes of these regulations as they do under the NGPA.

The definitions provided under paragraph (b) include basic terms used throughout the regulations and particular terms, such as "production in commercial quantities," "crude oil," "surface location," "intrastate contract," "successor to an intrastate contract," and "intrastate rollover contract," used in more than one subpart. Two of these definitions differ from those which were first proposed: that for "Btu," and that for "production in commercial quantities."

The definition of "Btu," found in clause (2) of paragraph (b), has been amended to conform it to § 270.204. This was done in response to those comments which pointed out a discrepancy between these two sections.

• • • •

III. PUBLIC PROCEDURE

Subchapters H and I of Title 18 were published in the Federal Register as a notice of proposed rulemaking at 43 FR 53270 on November 15, 1978. That proposal included the following description of the procedures the Commission had applied and would apply to the promulgation of final regulations implementing the Natural Gas Policy Act:

> Although the NGPA was not enacted until November 9, 1978, most of its provisions become effective on December 1, 1978. On that date, persons affected by the Act, including a large portion of the natural gas industry not previously regulated by the Federal government, will be subject to a comprehensive and

complex new regulatory structure. For reasons set out more fully below, regulations implementing the Act must be effective on December 1, 1978, both for guidance to those regulated and to insure compliance with the new law.

When it became apparent that the period between final enactment of the law and its effective date would not provide sufficient time for the normal rulemaking procedures, the Commission established the following schedule and procedures.

The Commission has been meeting in public session since November 1, 1978, in order to discuss regulations drafted by the staff to implement the NGPA. Prior to the first meeting, the Commission made copies of the various proposals under consideration available to the public. As successive drafts were completed, these too were released prior to Commission discussion. During all of this period, certain members of the Commission staff were publicly designated as contact persons to answer legal and technical questions concerning the implementation of the Act.

The Commission intends to promulgate interim regulations on November 27, 1978. The interim regulations will be effective on December 1. A 60-day comment period will be afforded with respect to the interim regulations and public hearings will be held. The interim regulations will, after the 60-day period and after all views received since November 1, 1978, have been considered, be modified to the extent such comments and the Commission's experience under the interim regulations indicate the modification is appropriate.

The proposal published today provides for a comment period ending on November 20. The Commission is aware that in view of the significance and

complexity of these regulations, comments will be extensive. To the extent possible, comments received before November 20 will be reviewed and appropriate changes incorporated into the interim regulations. As stated above, all comments will be retained and considered together with the additional comments received during the 60-day period afforded for comments on the interim regulations. The Commission believes that to the extent practicable, the procedures being followed with respect to these regulations are those best designed to insure maximum public participation prior to the time when the interim regulations must be effective.

In establishing this notice and comment procedure, the Commission has considered a number of factors. Most important, as stated above, is the fact that most of the Act's provisions become effective on December 1, 1978, including provisions establishing maximum lawful prices applicable to first sales of natural gas delivered after November 30, 1978. Some of the prices which may be charged for natural gas deliveries under the Act are established by reference to existing prices.

For other categories, pricing determinations must be made by State or Federal agencies with regulatory authority over the production of natural gas. Unless the interim regulations are available on December 1, 1978, members of the public whose sales are governed by provisions of the Act will not be able to ascertain the applicable maximum lawful price governing their sales of natural gas. Indeed, some sellers and transporters of natural gas could unknowingly be in technical violation of the law. Purchasers may be uncertain whether prices requested exceed the prices permitted under the law. Similarly, agencies which must make determinations with respect to eligibility for prices established by

the Act must be made aware of Commission requirements applicable to these determinations, including the manner in which the Commission will review such determinations.

After consideration of the problems associated with any delay in promulgating implementing regulations, the Commission has reached the conclusion that because the regulations must be effective by December 1, 1978, good cause exists to limit as described above notice and public procedure on this proposal. Full notice and public procedure on the proposal at this time, which as a practical matter would result in a delay of the effective date of the regulations beyond the effective date of the NGPA, are impractical and contrary to the public interest. It should be emphasized that all of the procedures described above will provide the fullest possible opportunity for public participation during the entire process leading to the promulgation of final regulations.

CONSIDERATION OF COMMENTS

A substantial number of written comments have been received in response to the notice of proposed rulemaking. In addition, the staff met informally, prior to the close of the comment period, with representatives of state agencies, consumer groups, and the industries affected by the proposed regulations. A notice, describing these meetings and inviting any interested person to meet informally with designated members of the Commission staff was issued on November 17, 1978. Minutes of these informal meetings, together with any written materials presented at these meetings, have been included in the public file. All comments received by the Commission by November 20, 1978, and to the extent possible, comments received after that date, have been considered. In the limited time available to the Commission and its

staff, changes in the regulations have been made. The major changes are noted in Section II of this preamble. The preamble also discusses a number of suggestions made in the comments which have not been incorporated into these regulations.

Because of the time limitation, some changes have been made, generally of a minor nature which are not discussed in the preamble, and the reasons for not adopting some suggestions are not mentioned. To the extent possible, significant changes have been explained. The Commission wishes to emphasize that all comments will be retained and reconsidered with comments received as a result of this publication. Accordingly, suggested changes, deletions or additions, not adopted by the Commission in these rules, will, in light of additional information received in the next 60 days, be re-examined and possibly adopted as amendments to the interim regulations.

ADDITIONAL COMMENTS

In accordance with the procedures described below, the Commission solicits comments on all aspects of these interim regulations. It should be emphasized that the Commission intends to review the regulations in their entirety and make whatever changes it deems appropriate based on the comments already received, additional written comments, the views expressed in public hearings, and experiences under the regulations during the next 60 days.

Interested persons are invited to submit written comments on the regulations to the Office of the Secretary, Federal Energy Regulatory Commission, 825 North Capitol Street, N.E., Washington, D.C. 20426. Comments should reference Docket No. RM79-3 on the outside of the envelope and on all documents submitted to the Commission. To assist the Commission, it is requested that comments identify the section or subpart addressed, state

whether the comments involve technical, legal, or policy matters, and if alternative approaches are suggested, provide proposed implementing language to the extent practicable.

Fifteen copies should be submitted. All comments and related information received by the Commission by January 31, 1979, will be considered prior to promulgation of revisions or amendments to these regulations.

PUBLIC HEARINGS

The Commission intends to hold a series of public hearings on these interim regulations, as required by section 502(b) of the NGPA. For the reasons stated above, however, the Commission finds that it is impracticable to provide an opportunity for oral presentation of data, views and arguments prior to the effective date of the regulations, and waives for 45 days the requirement of prior hearings under section 502(b). The dates and locations of the public hearings will be announced as soon as practicable.

EFFECTIVE DATE

As stated above, the Commission has determined that a delay of the effective date of the regulations beyond the effective date of the Natural Gas Policy Act is impractical and contrary to the public interest. Accordingly, the Commission finds that good cause exists for making the regulations effective on December 1, 1978.

(Natural Gas Act, as amended, 15 U.S.C. 717 *et seq.*, Energy Supply and Environmental Coordination Act, 15 U.S.C. 791 *et seq.*, Federal Energy Administration Act, 15 U.S.C. 761 *et seq.*, Natural Gas Policy Act of 1978, P.L. 95-621, 92 Stat. 3350, Department of Energy Organization Act, P.L. 95-91, E.O. 12009, 42 F.R. 46267)

In consideration of the foregoing, Chapter I of Title 18, Code of Federal Regulations, is amended as set forth below.

By the Commission.

/s/ Lois D. Cashell
LOIS D. CASHELL
Acting Secretary

* * * *

5. Chapter I of Title 18 is amended by adding new Subchapters H and I to read as follows:

SUBCHAPTER H—REGULATION OF NATURAL GAS SALES UNDER THE NATURAL GAS POLICY ACT OF 1978

Part

270 Rules generally applicable to regulated sales of natural gas.

271 Ceiling prices.

272 [Reserved]

273 Collection authority; refunds.

274 Determinations by jurisdictional agencies.

275 Commission determinations and review of jurisdictional agency determinations.

276 Reports.

PART 270—RULES GENERALLY APPLICABLE TO REGULATED SALES OF NATURAL GAS

Subpart A—General Rules and Definitions

Sec.

270.101 Application of ceiling prices to first sales of natural gas.

270.102 Definitions.

270.103 Effective date.

Subpart B—Special Rules

Sec.

270.201 First sale of natural gas subject to differing maximum lawful prices.

270.202 Resales.

270.203 Pipeline or distributor production.

270.204 Btu content per unit volume of natural gas.

270.205 Indefinite price escalator clauses.

Authority: This part is issued under the Natural Gas Policy Act of 1978, P.L. 95-621, 92 Stat. 3350.

* * * *

§ 270.102 *Definitions.*

(a) *NGPA definitions.* Terms defined in the NGPA shall have the same meaning for purposes of this subchapter as they have under the NGPA, unless further defined in this subchapter.

(b) *Subchapter H definitions.* For purposes of this subchapter:

(1) "NGPA" means the Natural Gas Policy Act of 1978.

(2) "British thermal unit" or "Btu" means the quantity of heat required to raise the temperature of one pound avoirdupois of pure water from 58.5 degrees to 59.5 degrees Fahrenheit, determined in accordance with § 270.204.

(3) "MMBtu" means million British thermal units.

* * * *

SUBPART B—SPECIAL RULES

* * * *

§ 270.204 *Btu content per unit volume of natural gas.*

For purposes of determining the number of Btu's per unit volume of natural gas, the Btu content of one cubic foot of natural gas is the number of Btu's produced by the combustion, at constant pressure, of the amount of gas which would occupy a volume of 1.0 cubic foot at a temperature of 60 degrees Fahrenheit, saturated with water vapor and under a pressure equivalent to that of 30.00 inches of mercury at 32 degrees Fahrenheit, and under

standard gravitational force (980.665 centimeters per second squared) with air of the same temperature and pressure as the gas, when the products of combustion are cooled to the initial temperature of the gas and air and when the water formed by combustion is condensed to the liquid state.

* * * *

DC-C-23

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Charles B. Curtis, Chairman;
Georgiana Sheldon,
Matthew Holden, Jr.,
and George R. Hall.

Docket No. RM79-3

INTERIM REGULATIONS IMPLEMENTING THE
NATURAL GAS POLICY ACT OF 1978

ORDER GRANTING IN PART AND DENYING IN PART APPLICATIONS FOR REHEARING OF THE INTERIM REGULATIONS

(Issued April 19, 1979)

On January 3, 1979, the Commission issued Order No. 21 in Docket No. RM79-12, which prescribed a final regulation providing for a rehearing procedure for rules or orders issued under the Natural Gas Policy Act of 1978 (NGPA). Pursuant to the provisions of that regulation eight timely applications [1] were filed seeking rehearing of the interim regulations implementing the NGPA published December 1, 1979, 43 *Fed. Reg.* 56463. Furthermore, one untimely application for rehearing was filed by Belco Petroleum Corporation. In response to such applications, the Commission issued an order on March 2, 1979, granting rehearing solely for purposes of further

[1] The applications were filed by Shell Oil Company, Indicated Intrastate and Interstate Gas Consumers, Indicated Producers, Texasgulf Inc., Monterey Pipeline Company, Kentucky West Virginia Gas Company, Continental Oil Company and Consolidated Gas Supply Corporation.

consideration in the context of the Commission's ongoing process of reviewing public comments on the NGPA interim regulations and issuing final regulations. The March 2 order did indicate, however, that we would give special consideration to the matters raised in the rehearing applications in establishing priorities for the issuance of final regulations.

Consistent with this approach, on March 23, 1979, the Commission issued final regulations under Part 276.[2] Those portions of the subject applications raising issues relative to Part 276 annual reports were considered and acted on by the Commission.

In addition to the Commission's consideration of the applications for rehearing in conjunction with its promulgation of final regulations, we have determined to grant rehearing of section 271.803(b) apart from the issuance of final regulations relative to this section. The application for rehearing by Indicated Producers raises an issue which deserves our immediate attention as set out below.

The table set forth in section 271.803(b) of the interim regulations defines "Nonassociated natural gas" relative to three distinct levels of production from a well. The production level of "50 Mcf or more but less than 60 Mcf" should be changed to read "50 Mcf or more but not more than 60 Mcf". This change will conform the regulations with section 108 of the NGPA which specifically defines stripper well gas as gas from a well which produced nonassociated gas at rate *which does not exceed* an average of 60 Mcf per production day during the preceding 90 day production period. In order to effect this change, the Commission is issuing, simultaneously with this order, an order amending section 271.803(b) of the interim regulations.

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[2] Docket No. RM79-30 (March 23, 1979).

Further, with respect to those applications (or portions thereof) which have not been acted on in conjunction with our promulgation of final regulations, the Commission concludes that such applications for rehearing should be denied insofar as they relate to the interim regulations.

In order to avoid confusion as to the effect of the issuance of final regulations on rehearing applications filed in response to the interim regulations, we believe that some clarification on this point is appropriate.

As noted above, some interested persons petitioned for rehearing of particular aspects of the interim regulations. Others did not, in the apparent belief that they would be able to satisfy any rehearing requirement after the "interim" regulations were succeded by "permanent" regulations. The Commission addressed one aspect of this problem in Order No. 23 concerning its policy toward the effect of NGPA on indefinite escalation clauses in interstate and intrastate gas sales contracts. (mimeo n. 9, p. 8). Because of the inter-relationship between the Natural Gas Act and NGPA, many of the interim regulations concerning interstate gas sales have been issued under both statutes. The Commission must assure that no interested person is denied the right to seek rehearing under Section 19(b) of the Natural Gas Act and Section 506 of NGPA, that the rehearing requirement under those statutes is satisfied insofar as it is a procedural prerequisite to judicial review, and must also provide, for the Commission's benefit, an administrative procedure that enables the Commission to take a last look at its action in the light of particularized claims of legal error or factual misapprehension. Accordingly, the Commission has endeavored to devise a treatment for rehearing applications of the interim and permanent regulations that is practical in terms of expediting administrative finality and minimizing procedural burdens, and fair in terms of assuring that all interested persons are

heard and are not improvidently cut off from their right to seek judicial review.

First, the Commission concludes that those parties who petitioned for rehearing of the interim regulations, and whose petitions have been subsequently denied, may immediately seek judicial review of those regulations with respect to any matters raised in such petitions for the period the interim regulations are in effect. As noted in Order No. 21 (rehearing procedures for the NGPA), because there was uncertainty as to the necessity for rehearing under NGPA, and no procedure existed until Order No. 21 was issued, all persons were allowed a period to and including February 3, 1979, during which to file petitions for rehearing of the interim regulations.[3] All persons have thus had a reasonable opportunity to seek rehearing of the interim rules for the period they will be in effect, i.e., until superseded by particular permanent rules.

Second, any party who did not seek rehearing of the interim regulations nevertheless may, and, to obtain judicial review of any permanent rules, must separately petition for rehearing with respect to those rules.

Third, insofar as the permanent rules incorporate provisions of the interim rules as to which rehearing has been denied, no further petition by the petitioning party is required because the underlying issues have already been thoroughly aired. The Commission will consider the earlier petitions as if filed with respect to the permanent rules and to the extent the rule is unchanged, the petitions shall be deemed denied.

Fourth, if the permanent rule contains modifications of the interim rule all dissatisfied persons must apply for rehearing of the modifications, whether or not rehearing of the interim rules was sought, before judicial review becomes available.

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[3] Docket No. RM79-12 (January 3, 1979).

The foregoing procedure will avoid needless duplication of rehearing petitions filed by the same person insofar as particular provisions of the interim and permanent regulations are the same; will provide the interested persons and the Commission with a rehearing procedure directed at the permanent regulations that contain modifications of the interim regulations; will permit judicial review of the interim regulations for the period they are in effect; and will provide those who postponed seeking rehearing of the interim regulations with an opportunity to do so with respect to the permanent regulations as they are issued, and thereafter to pursue judicial remedies.

Commission orders:

That the subject applications for rehearing filed in Docket No. RM79-3 are granted in part and denied in part as is specifically set forth above.

By the Commission.

[SEAL]

LOIS D. CASHELL,
Acting Secretary.

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

[18 CFR Parts 2, 157, 270, 271,
273, 274, 275, 276, 284]

[Docket No. RM79-3]

REGULATIONS IMPLEMENTING THE NATURAL GAS POLICY ACT OF 1978

AGENCY: Federal Energy Regulatory Commission

ACTION: Notice of Proposed Rulemaking

SUMMARY: The Natural Gas Policy Act of 1978 (NGPA), enacted November 9, 1978, takes effect with respect to certain first sales of natural gas delivered on or after December 1, 1978. The new statutory provisions relating to pricing of natural gas and other issues must, therefore, be implemented by regulation by that date. These proposed implementing regulations are being issued for a brief public comment period prior to promulation of interim regulations. The Commission will then receive comments on the interim regulations for 60 days and will revise the interim regulations as appropriate.

DATE: Written comments by November 20, 1978.

ADDRESS: Office of the Secretary, Federal Energy Regulatory Commission, 825 N. Capitol St., N.E., Washington, D.C. 20426, (Reference Docket No. RM79-3).

FOR FURTHER INFORMATION CONTACT:

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I. INTRODUCTION

On November 9, 1978, the Natural Gas Policy Act of 1978 (NGPA) was signed into law. By passage of the NGPA, Congress has mandated a new legislative framework for the regulation of most facets of the natural gas industry. The new law affects sales, transmission and distribution of natural gas. The previously controlling federal regulatory statute, the Natural Gas Act (NGA) has in many respects been limited, replaced or superseded by the NGPA.

A primary effect of the NGPA is the substitution of a series of specific statutory maximum price levels applicable to discrete types of "first sales" of natural gas for the previously established system of price regulation of interstate sales of natural gas which had been grounded in a cost-based methodology. An important distinction between producer regulation under the NGA and the NGPA is the expansion of the Federal Energy Regulatory Commission's (Commission) jurisdictional scope to encompass not only sales made in interstate but in intrastate commerce as well. Under the NGPA, all first sales of natural gas are controlled by the maximum statutory ceiling rates and as a result, it is unlawful for any person to sell natural gas at a price in excess of the statutory maximum regardless of whether the sale occurs in the inter- or intrastate market.

The Commission wishes to call specific attention to the provisions of section 101(b)(g) of the NGPA. The Congress, by that provision, emphasizes and makes clear that the maximum lawful prices under the NGPA are *ceiling* prices and do not supersede or nullify the effectiveness of any contractual agreement to pay a lower price. Therefore, the Commission cautions producers not to assume entitlement to any NGPA ceiling price which is higher than their contract prices.

The Commission is directed to administer essentially all of the NGPA and is authorized to perform any and

all acts and to prescribe and issue such rules and orders as it finds necessary or appropriate to carry out its functions under the NGPA. The proposed regulations, contained in this notice, mark the first step in carrying out the basic responsibilities for implementation and administration of the Act and provide a mechanism for transition from the NGPA regulating regime to the NGPA scheme.

The NGPA is divided into six titles:

I. Pricing

A. Price Controls Applicable to Sales of Natural Gas

B. Decontrol of Certain Natural Gas Prices

II. Incremental Pricing

III. Additional Authorities and Requirements

A. Emergency Authorities

B. Other Authorities and Requirements

IV. Natural Gas Curtailment Policies

V. Administration, Enforcement, and Review

VI. Coordination with the Natural Gas Act, Effect on State Laws

The regulations proposed here do not implement all titles under the NGPA. Rather, the regulations propose to deal with those areas demanding the most expeditious treatment.

This first group of regulations is designed to set in motion the new scheme for pricing of first sales of natural gas and to provide mechanisms for implementation of provisions of the NGPA covering certain arrangements for transportation of natural gas. However, before setting out in detail a full description of the specific regulations proposed, a summary of the most salient features of the

NGPA, the effect on regulation under the NGA, and a capsule description of the implementing regulations and corollary modifications of regulations under the NGA, may be useful.

THE LEGISLATIVE SCHEME OF THE NGPA

The nature and scope of Commission regulation of producer sales under the NGPA has been substantially transformed from utility-type regulation of a limited market to what is essentially price regulation of an entire national market. Under the scheme set up by the NGPA, there exist two major categories of first sales: those requiring a prior determination of eligibility to be made by a jurisdictional federal or state agency before collection of the maximum lawful price and those not explicitly requiring such a determination. A decision as to whether a first sale falls into a category requiring a determination is fundamental. A decision to seek a determination triggers quite different regulatory consequences than an opposite conclusion.

Although the Commission may be called upon to return to the cost-based, just and reasonable methodology within the meaning of the NGA in establishing rates in excess of the NGPA ceiling prices, the basic administration of the pricing provisions of the NGPA will be undertaken from an entirely different perspective. The Commission will no longer inquire into producer costs or set permissible rates of return for producers. Instead, the Commission's focus will center on whether geological information, production history, field records, prior contractual relationships and information of a similar nature support the categorization for pricing purposes claimed by producers.

Another crucial factor in anticipating what regulatory treatment will be accorded producer sales of natural gas is whether gas is "committed or dedicated" for purposes

of NGA regulation. The limitations on NGA regulation as a result of enactment of the NGPA will be addressed in another section of this preamble. However, the distinction between gas which is deemed to be subject to continuing regulation under the Natural Gas Act and gas which falls solely within the NGPA regulatory format is significant and affects both pricing and non-pricing regulation of producer matters.

For categories of gas requiring a prior determination by a federal or state agency, the Commission's function is more in the nature of an appellate body, reviewing, on a substantial evidence basis, the factual determinations of the appropriate jurisdictional agency with the right of disapproval in the event the initial determination is not adequately substantiated. The Commission rules reflect this role and prescribe the basic and minimum factual foundation necessary to meet its review responsibilities without directly interposing the Commission into the procedural functioning of the jurisdictional agency. The review process of initial determinations begins when notice is received of a jurisdictional agency's determination with the appropriate supporting material specified in Part 274 of the proposed regulations. In the absence of a reversal, the determination of the jurisdictional agency becomes final and no longer subject to review unless based on any untrue statement of material fact or upon any omission of material fact which omission was misleading.

Categories of first sales explicitly requiring that a determination as to qualification to collect the maximum lawful price be made by either a jurisdictional federal or state agency are:

- Section 102 which sets a maximum lawful price for first sales of new natural gas (gas produced from a new lease on the Outer Continental Shelf (OCS) or certain new onshore wells) and gas produced from any old OCS lease which was from a reservoir discovered after July 27, 1976;

- Section 103 which sets a maximum price for first sales of new onshore production wells;
- Section 107 which sets a maximum lawful price for first sales of high cost natural gas including gas produced from geopressurized brine, coal, seams, Devonian shale or gas produced under other conditions the FERC determines to present "extraordinary" risks or costs; and
- Section 108 which sets the maximum lawful price for first sales of stripper well natural gas.

An essential element in the regulatory system established with respect to categories requiring a prior determination is the provision for interim collection procedures by producers awaiting a final determination or the outcome of a review of such determination. The Commission has a concomitant power to require refunds from the producer if the gas eventually qualifies for a lower price. Section 503(e) sets out this collection and refunding procedure.

Part 273 of the regulations states the prerequisites for interim collection. First, the Commission has established a "transitional rule" to permit the collection by producers of the section 109 price if a producer files for a determination by March 1, 1979. Additional rules are established for interim collection pending and following a state or federal agency determination.

Those first sales of natural gas not requiring a prior determination to be made by a jurisdictional federal or state agency are tied to previously existing contractually set prices or price levels established by the Federal Power Commission or this Commission. First sales not requiring a prior determination under the NGPA are:

- Section 104 which incorporates by reference the just and reasonable rates established under the NGA for first sales of gas committed or dedicated to interstate

commerce on the day before the date of enactment of the NGPA;

- Section 105 which establishes maximum lawful prices for first sales under existing contracts of natural gas not previously committed or dedicated to interstate commerce; and
- Section 106 which establishes maximum lawful prices for first sales under interstate and intrastate rollover contracts;
- Section 109 which establishes the maximum lawful price for first sales of natural gas from the Prudhoe Bay in Alaska and categories of gas not otherwise covered by other sections of the NGPA.

The Commission has general administrative and enforcement authority under the NGPA and the NGA to order refunds in cases where the maximum lawful price level has been improperly exceeded.

EFFECT OF THE NGPA UPON CONTINUED NGA REGULATION

As stated previously, natural gas which remains committed or dedicated to interstate commerce on the day before the date of enactment of the NGPA or which is not specifically exempted from the jurisdictional consequences of commitment or dedication by the NGPA, remains subject to all the non-price regulatory requirements of the NGA. An important aspect of continued NGA regulation is the requirement that a producer file an abandonment application with the FERC pursuant to section 7(b) of the NGA before terminating service to the interstate market or before abandonment of facilities used to render interstate service. Additionally, although price regulation of first sales by producers of gas committed or dedicated is now governed by the NGPA, sections 104 and 106(a) are grounded in previously established rates under

the NGA. As a result, producers wishing to establish their right to collect under these sections will be required to make a filing under their rate schedules under the NGA. On November 16, 1978, the Commission intends to amend its previously existing filing requirements to provide new procedures governing these rate increase filings.

If gas is not committed or dedicated to interstate commerce as defined in section 2(18) or is exempted from the jurisdiction of the NGA under section 601(a)(1)(B) as high cost natural gas, new natural gas, or natural gas produced from any new onshore production well, the prior framework of utility-type regulation under the NGA no longer applies.

If natural gas sales are freed from the requirements of the NGA, several adjuncts to NGA regulation are obviated. First, there is no longer any necessity for a producer to seek certification of the sale as serving the public convenience and necessity. The replacement for this requirement under the NGPA is limited to the state determination mechanism and the pricing limits established in the NGPA. New sales in interstate commerce no longer require certification as a prerequisite to commencement of deliveries. Nor does the requirement for abandonment authorization before termination of deliveries of natural gas exist with respect to natural gas no longer subject to NGA regulation. In the case of first sales of natural gas not previously committed or dedicated to interstate commerce or exempted from NGA regulation, tariff filings and rate increase applications are dispensed with. (Of course, specific requirements for filing to establish the right to collect the maximum lawful price levels exist under the regulations and annual reporting will be required under the NGPA in many instances. However, the nature of these filings, which are in many cases one-time notification type filings is quite different from the rate filings previously required under the NGA.)

For natural gas which on the date of enactment was committed or dedicated but which is exempted from the NGA under section 601(a)(1) of the NGPA, there are substitute mechanisms for NGA section 7(b) abandonment authorization. These substitute provisions, intended to provide a degree of certainty to purchasers dependent upon a predictable natural gas supply, are found in section 315 of the NGPA. The Commission has not attempted to implement these sections in the initial implementing regulations. It is our intent to do so in the near future. That section gives the Commission dual authority to establish by rule or order the minimum duration of any contract (other than an existing contract) for the purchase of natural gas and to require by rule right of first refusal with respect to any gas committed or dedicated to interstate commerce before the date of enactment if such gas is high cost gas, new natural gas or natural gas produced from any new, onshore production well.

Indirectly, NGA regulation is affected by the operation of section 601(b) and (c) of the NGPA. Section 601(b) provides that any amount paid in any first sale of natural gas shall be deemed to be just and reasonable if such amount does not exceed the maximum lawful ceilings established by the NGPA or if there is no maximum lawful price applicable by reason of elimination of price controls. Section 601(c), the guaranteed passthrough provision, states that the Commission may not deny, or condition the grant of any certificate under section 7 of the NGA based upon the amount paid in any sale of natural gas if the amount paid meets the standards of section 601(b) and is, therefore, by statutory fiat, just and reasonable. Additionally, the Commission may only deny the recovery by any interstate pipeline of any amount paid with respect to the purchase of natural gas under section 601(b) to the extent the Commission determines that the amount paid was excessive due to fraud, abuse, or similar grounds.

Finally, included in the implementing regulations are provisions covering certain transportation service by both interstate and intrastate pipelines. Provision is made for intrastate pipeline sales and for the assignment of natural gas excess to their requirements. Also, the Commission has revised its regulations previously applicable to emergency transactions and revised the procedure and the standards for emergency sales of natural gas for this winter's heating season.

GENERAL OUTLINE OF IMPLEMENTING REGULATIONS

The proposed regulations add two new subchapters to the Commission's regulations in Chapter I of Title 18. New Subchapter H (Parts 270 through 276) contains the new producer regulations under the NGPA. Part 270 sets forth general rules applicable to the entire subchapter. Maximum lawful prices under NGPA sections 102 through 109 are implemented in Part 271. Part 273 provides for interim collections and refunds, while determinations of eligibility by state and federal agencies and Commission review of those determinations are provided for under Parts 274 and 275. Finally, Part 276 covers reports.

* * * *

To assist the reader and guide comment, a brief description of each part and subpart is included as a preamble to the text of the regulation. The statutory requirements that certain of our implementing regulations be fashioned and made effective on December 1, 1978, has not permitted the Commission to provide as full and detailed an explanation of its regulations as we would have liked. However, before any regulation is placed into effect (with or without modification) we expect to be able to add greater substance to the explanatory materials, guided by the written comments of interested parties received in response to this invitation for views.

II. SUMMARY OF PROPOSED REGULATIONS

PART 270

Part 270 prescribes rules and definitions that apply to Subchapter H. Subpart A contains the general rules and definitions. Subpart B contains special rules.

• • • •

Section 270.102(a) provides that terms defined in the NGPA have the same meaning for purposes of these regulations unless further defined. Some terms used in individual sections or subparts are defined therein. Those used in more than one Subpart are defined in § 270.102 (b).

• • • •

Finally, § 270.204 presents the technical information necessary to determine the number of British thermal units (Btu's) per unit volume of natural gas. This is necessary because maximum lawful prices for first sales of natural gas are stated in terms of dollars per million Btu's.

• • • •

III. PUBLIC PROCEDURE

Although the NGPA was not enacted until November 9, 1978, most of its provisions become effective on December 1, 1978. On that date, persons affected by the Act, including a large portion of the natural gas industry not previously regulated by the Federal government, will be subject to a comprehensive and complex new regulatory structure. For reasons set out more fully below, regulations implementing the Act must be effective on December 1, 1978, both for guidance to those regulated and to insure compliance with the new law.

When it became apparent that the period between final enactment of the law and its effective date would not provide sufficient time for the normal rulemaking pro-

cedures, the Commission established the following schedule and procedures.

The Commission has been meeting in public session since Novemmber 1, 1978, in order to discuss regulations drafted by the staff to implement the NGPA. Prior to the first meeting, the Commission made copies of the various proposals under consideration available to the public. As successive drafts were completed, these too were released prior to Commission discussion. During all of this period, certain members of the Commission staff were publicly designed as contact persons to answer legal and technical questions concerning the implementation of the Act.

The Commission intends to promulgate interim regulations on November 27, 1978. The interim regulations will be effective on December 1. A 60-day comment period will be afforded with respect to the interim regulations and public hearings will be held. The interim regulations will, after the 60-day period and after all views received since November 1, 1978, have been considered, be modified to the extent such comments and the Commission's experience under the interim regulations indicate that modification is appropriate.

The proposal published today provides for a comment period ending on November 20. The Commission is aware that in view of the significance and complexity of these regulations, comments will be extensive. To the extent possible, comments received before November 20 will be reviewed and appropriate changes incorporated into the interim regulations. As stated above, all comments will be retained and considered together with the additional comments received during the 60-day period afforded for comments on the interim regulations. The Commission believes that to the extent practicable, the procedures being followed with respect to these regulations are those best designed to insure maximum public participation

prior to the time when the interim regulations must be effective.

In establishing this notice and comment procedure, the Commission has considered a number of factors. Most important, as stated above, is the fact that most of the Act's provisions become effective on December 1, 1978, including provisions establishing maximum lawful prices applicable to first sales of natural gas delivered after November 30, 1978. Some of the prices which may be charged for natural gas deliveries under the Act are established by reference to existing prices. For other categories, pricing determinations must be made by State or Federal agencies with regulatory authority over the production of natural gas. Unless the interim regulations are available on December 1, 1978, members of the public whose sales are governed by provisions of the Act will not be able to ascertain the applicable maximum lawful price governing their sales of natural gas. Indeed, some sellers and transporters of natural gas could unknowingly be in technical violation of the law. Purchasers may be uncertain whether prices requested exceed the prices permitted under the law. Similarly, agencies which must make determinations with respect to eligibility for prices established by the Act must be made aware of the Commission requirements applicable to these determinations, including the manner in which the Commission will review such determinations.

After consideration of the problems associated with any delay in promulgating implementing regulations, the Commission has reached the conclusion that because the regulations must be effective by December 1, 1978 good cause exists to limit as described above notice and public procedure on this proposal. Full notice and public procedure on the proposal at this time, which as a practical matter would result in a delay of the effective date of the regulations beyond the effective date of the NGPA, are impractical and contrary to the public interest. It should

be emphasized that all of the procedures described above will provide the fullest possible opportunity for public participation during the entire process leading to the promulgation of final regulations.

IV. WRITTEN COMMENTS

Interested persons are invited to submit written comments on the proposed regulations to the Office of the Secretary, Federal Energy Regulatory Commission, 825 North Capitol Street, N.E., Washington, D.C. 20426. Comments should reference Docket No. RM79-3 on the outside of the envelope and on all documents submitted to the Commission. In view of the short comment period available on these proposed regulations, and in order that the Commission be able to take into account as many comments as possible, the Commission requests that persons submitting comments assist in three ways. First, persons should identify specifically the section or subpart they are addressing. Second, comments should clearly state whether they involve technical, policy or legal matters. Finally, where comments urge a different approach from one presented, specific alternative language should be proposed to the extent practicable.

Fifteen (15) copies should be submitted. To the extent possible, all comments and related information received by the Commisison by November 20, 1978, will be considered prior to the promulgation of interim regulations on November 27, 1978. All comments will be retained and considered prior to the promulgation of final regulations.

(Natural Gas Act, as amended, 15 U.S.C. 717 *et seq.*, Energy Supply and Environmental Coordination Act, 15 U.S.C. 791 *et seq.*, Federal Energy Administration Act, 15 U.S.C. 761 *et seq.*, Natural Gas Policy Act of 1978, P.L. ———, Department of Energy Organization Act, P.L. 95-91, E.O. 12009, 42 F.R. 46267)

In consideration of the foregoing, it is proposed to amend Chapter I of Title 18, Code of Federal Regulations as set forth below.

By the Commission.

/s/ Kennth F. Plumb
KENNETH F. PLUMB
Secretary

* * * *

• • • •

3. Chapter I of Title 18 is amended by adding new Subchapters H and I to read as follows:

SUBCHAPTER H—PRODUCER REGULATION UNDER NATURAL GAS POLICY ACT OF 1978

Part

270—Rules generally applicable to producer regulation.

271—Ceiling prices.

272—[Reserved]

273—Collection authority; refunds.

274—Determinations by jurisdictional agencies.

275—Commission determinations and review of jurisdictional agency determinations.

276—Reports.

PART 270—RULES GENERALLY APPLICABLE TO PRODUCER REGULATION

• • • •

§ 270.102 *Definitions.*

(a) *NGPA definitions.* Terms defined in the NGPA shall have the same meaning for purposes of this subchapter as they have under the NGPA, unless further defined in this subchapter.

(b) *Subchapter H definitions.* For purposes of this subchapter:

(1) "NGPA" means the Natural Gas Policy Act of 1978.

(2) "British thermal unit" or "Btu" means the quantity of heat required to raise the temperature of one pound avoirdupois of pure water from 58.5 degrees to 59.5 degrees Fahrenheit. For the purposes of this subchapter, the standard for measuring the heat value of

natural gas is Btu's per cubic foot saturated with water at 60 degrees Fahrenheit and 14.73 psia.

(3) "MMBtu" means million British thermal units.

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SUBPART B—SPECIAL RULES

Sec.

270.201 First sales of natural gas subject to differing maximum lawful prices.

270.202 Resales.

270.203 First sales of natural gas attributable to pipeline or distributor production.

270.204 Btu content per unit volume of natural gas.

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§ 270.204 *Btu content per unit, volume of natural gas.*

For purposes of determining the number of Btu's per unit volume of natural gas, the Btu content of one cubic foot of natural gas is the number of Btu's produced by the combustion, at constant pressure, of the amount of gas which would occupy a volume of 1.0 cubic foot at a temperature of 60 degrees Fahrenheit, saturated with water vapor and under a pressure equivalent to that of 30.00 inches of mercury at 32 degrees Fahrenheit, and under standard gravitational force (980.665 centimeters per second squared) with air of the same temperature and pressure as the gas, when the products of combustion are cooled to the initial temperature of the gas and air and when the water formed by combustion is condensed to the liquid state.

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APPENDIX D

UNITED STATES COURT OF APPEALS FOR THE DISTRICT OF COLUMBIA CIRCUIT

September Term, 1982

No. 81-1690

INTERSTATE NATURAL GAS ASSOCIATION OF AMERICA,
Petitioner

v.

FEDERAL ENERGY REGULATORY COMMISSION,
Respondent

MOBIL OIL CORPORATION, ET AL.,
GENERAL AMERICAN OIL COMPANY OF TEXAS,
PHILLIPS PETROLEUM COMPANY,
PENNZOIL COMPANY,
MISSISSIPPI RIVER TRANSMISSION CORP.,
SHELL OIL COMPANY,
EXXON CORPORATION,
LACLEDE GAS COMPANY,
GETTY OIL COMPANY,
LOUISIANA LAND & EXPLORATION COMPANY,
ASSOCIATED GAS DISTRIBUTORS,
NORTHERN NATURAL GAS COMPANY,
TEXAS GAS TRANSMISSION CORPORATION,
TEXACO, INC.,
TENNECO OIL COMPANY,
HOUSTON OIL AND MINERALS CORPORATION,
GULF OIL CORPORATION,
PLACID OIL COMPANY,
AMINOIL USA, INC., ET AL.,
Intervenors

No. 81-1680

MICHIGAN WISCONSIN PIPELINE COMPANY,
Petitioner

v.

FEDERAL ENERGY REGULATORY COMMISSION,
Respondent

MOBIL OIL CORPORATION, ET AL.,
AMOCO PRODUCTION COMPANY,
GENERAL AMERICAN OIL COMPANY OF TEXAS,
PHILLIPS PETROLEUM COMPANY,
PENNZOIL COMPANY,
EXXON CORPORATION,
SHELL OIL COMPANY,
TENNECO OIL COMPANY,
UNION OIL COMPANY OF CALIFORNIA,
LOUISIANA LAND & EXPLORATION COMPANY,
GETTY OIL COMPANY,
ASSOCIATED GAS DISTRIBUTORS,
LACLEDE GAS COMPANY,
SUN OIL COMPANY,
ARCO OIL & GAS COMPANY,
PLACID OIL COMPANY,
TEXACO, INC.,
GULF OIL CORPORATION,
Intervenors

No. 81-1691

TRANSCONTINENTAL GAS PIPELINE CORPORATION,
Petitioner

v.

FEDERAL ENERGY REGULATORY COMMISSION,
Respondent

MOBIL OIL CORPORATION,
GENERAL AMERICAN OIL COMPANY OF TEXAS,
PHILLIPS PETROLEUM COMPANY,
PENNZOIL COMPANY,

SHELL OIL COMPANY,
ASSOCIATED GAS DISTRIBUTORS,
GETTY OIL COMPANY,
LOUISIANA LAND & EXPLORATION COMPANY,
TEXACO, INC.,
EXXON CORPORATION,
SUN OIL COMPANY,
TENNECO OIL COMPANY,
HOUSTON OIL AND MINERALS CORPORATION,
GULF OIL CORPORATION,
PLACID OIL COMPANY,
Intervenors

No. 81-1692

NATURAL GAS PIPELINE COMPANY OF AMERICA,
Petitioner

v.

FEDERAL ENERGY REGULATORY COMMISSION,
Respondent

MOBIL OIL CORPORATION, ET AL.,
GENERAL AMERICAN OIL COMPANY OF TEXAS,
PHILLIPS PETROLEUM COMPANY,
PENNZOIL COMPANY,
SHELL OIL COMPANY,
LACLEDE GAS COMPANY,
ASSOCIATED GAS DISTRIBUTORS,
GETTY OIL COMPANY,
LOUISIANA LAND & EXPLORATION COMPANY,
TEXACO, INC.,
SUN OIL COMPANY,
CHEVRON, USA,
EXXON CORPORATION,
TENNECO OIL COMPANY,
HOUSTON OIL AND MINERALS CORPORATION,
GULF OIL CORPORATION,
PLACID OIL COMPANY,
Intervenors

No. 81-1696

LONE STAR GAS COMPANY,
Petitioner

v.

FEDERAL ENERGY REGULATORY COMMISSION,
Respondent

GENERAL AMERICAN OIL COMPANY OF TEXAS,
PHILLIPS PETROLEUM COMPANY,
PENNZOIL COMPANY,
SHELL OIL COMPANY,
LACLEDE GAS COMPANY,
LOUISIANA LAND & EXPLORATION COMPANY,
GETTY OIL COMPANY,
ASSOCIATED GAS DISTRIBUTORS,
VALERO TRANSMISSION COMPANY,
TEXACO, INC.,
EXXON CORPORATION,
SUN OIL COMPANY,
TENNECO OIL COMPANY,
HOUSTON OIL AND MINERALS CORPORATION,
GULF OIL CORPORATION,
PLACID OIL COMPANY,
PANHANDLE EASTERN PIPE LINE CO., ET AL.,
Intervenors

No. 81-1802

LACLEDE GAS COMPANY,
Petitioner

v.

FEDERAL ENERGY REGULATORY COMMISSION,
Respondent

No. 82-1004

LONE STAR GAS COMPANY,
Petitioner

v.

FEDERAL ENERGY REGULATORY COMMISSION,
Respondent

EXXON CORPORATION,
CONOCO INC.,
GENERAL AMERICAN OIL COMPANY OF TEXAS,
PENNZOIL COMPANY,
TENNECO OIL COMPANY,
UNION OIL COMPANY OF CALIFORNIA,
GETTY OIL COMPANY,
AMINOIL USA, INC.,
GULF OIL CORPORATION,
TEXACO, INC.,
MOBIL OIL CORPORATION, ET AL.,
HOUSTON OIL AND MINERALS CORPORATION,
SHELL OIL COMPANY,
ATLANTIC RICHFIELD COMPANY,
SUN EXPLORATION AND PRODUCTION CO.,
Intervenors

No. 82-1177

ASSOCIATED GAS DISTRIBUTORS,
Petitioner

v.

FEDERAL ENERGY REGULATORY COMMISSION,
Respondent

Petition for Review of Orders of the
Federal Energy Regulatory Commission

Before: Robinson, Chief Judge, Mikva and Scalia, Circuit Judges

JUDGMENT

These causes came on to be heard on a petition for review of orders of the Federal Energy Regulatory Commission, and were argued by counsel. On consideration of the foregoing, it is

ORDERED, by this Court, that the petition for review filed herein by Lone Star Gas Company, designated appeal No. 81-1696, is dismissed for lack of jurisdiction. And it is further

ORDERED and ADJUDGED, by this Court, that the final rule of the Federal Energy Regulatory Commission, being reviewed herein, is vacated. Both the dismissal of the petition for review in appeal No. 81-1696 and the vacation of the final rule on review herein are in accordance with the opinion for the Court filed herein this date.

Per Curiam

For the Court

/s/ George A. Fisher
GEORGE A. FISHER
Clerk

Date: August 9, 1983.

Opinion for the Court filed by Circuit Judge Mikva.

UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT

September Term, 1983

No. 81-1690

INTERSTATE NATURAL GAS ASSOCIATION OF AMERICA,
Petitioner

v.

FEDERAL ENERGY REGULATORY COMMISSION,
Respondent

MOBIL OIL CORPORATION, *et al.*
GENERAL AMERICAN OIL COMPANY OF TEXAS, *et al.*
Intervenors

And Consolidated Cases

[Filed Oct. 19, 1983]

Before: Robinson, Chief Judge, Mikva and Scalia, Circuit Judges

ORDER

On consideration of the Petitions for Rehearing of Shell Oil Company and Texaco, Inc., Exxon Corporation, et al., Producers Amoco Production Co. et al. and Respondent Federal Energy Regulatory Commission, it is

ORDERED by the Court that the Petitions for Rehearing are denied.

Per Curiam

For the Court:

GEORGE A. FISHER
Clerk

By: /s/ Robert A. Bonner
ROBERT A. BONNER
Chief Deputy Clerk

UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT

September Term, 1983

No. 81-1690

INTERSTATE NATURAL GAS ASSOCIATION OF AMERICA,
Petitioner

v.

FEDERAL ENERGY REGULATORY COMMISSION,
Respondent

MOBIL OIL CORPORATION, *et al.*
GENERAL AMERICAN OIL COMPANY OF TEXAS, *et al.*
Intervenors

And Consolidated Cases

[Filed Oct. 19, 1983]

Before: Robinson, Chief Judge, Wright, Tamm, Wilkey, Wald, Mikva, Edwards, Ginsburg, Bork, Scalia and Starr, Circuit Judges

ORDER

The Suggestions for Rehearing *En Banc* of Shell Oil Company and Texaco, Inc., Exxon Corporation, et al., Producers Amoco Production Co. et al. and Respondent Federal Energy Regulatory Commission have been circulated to the full court and no member has requested the taking of a vote thereon. On consideration of the foregoing, it is

ORDERED by the Court en banc that the aforesaid suggestions are denied.

Per Curiam

For the Court:

GEORGE A. FISHER
Clerk

By: /s/ Robert A. Bonner
ROBERT A. BONNER
Chief Deputy Clerk

Circuit Judges Wright, Tamm, Bork and Starr did not participate in this Order.

UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT

September Term, 1982

No. 81-1690

INTERSTATE NATURAL GAS ASSOCIATION OF AMERICA
Petitioner

v.

FEDERAL ENERGY REGULATORY COMMISSION
Respondent

MOBIL OIL CORPORATION, *et al.*
Intervenors

And Consolidated Cases No. 81-1680,
81-1691, 81-1692, 81-1693, 81-1695,
81-1696, 81-1802, 82-1004, 82-1177

[Filed Oct. 25, 1983]

ORDER

On consideration of the Motions of Intervenors Amoco Production Company, et al. to dismiss the petitions for review and to vacate opinion and judgment in cases no. 81-1802 and 82-1177, and to vacate the opinion and judgment in part, the responses and the reply of Intervenors, it is

ORDERED by the Court that the aforesaid motions are denied.

Per Curiam

For The Court:

GEORGE A. FISHER
Clerk

By: /s/ Robert A. Bonner
ROBERT A. BONNER
Chief Deputy Clerk

UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT

September Term, 1983

No. 81-1690

INTERSTATE NATURAL GAS ASS'N OF AMERICA
Petitioner

v.

FEDERAL ENERGY REGULATORY COMMISSION,
Respondent

MOBIL OIL CORPORATION, *et al.*,
GENERAL AMERICAN OIL COMPANY OF TEXAS,
PHILLIPS PETROLEUM COMPANY,
PENNZOIL COMPANY,
MISSISSIPPI RIVER TRANSMISSION CORP.,
SHELL OIL COMPANY
EXXON CORPORATION
LACLEDE GAS COMPANY
GETTY OIL COMPANY,
LOUISIANA LAND & EXPLORATION COMPANY,
ASSOCIATED GAS DISTRIBUTORS,
NORTHERN NATURAL GAS COMPANY
TEXAS GAS TRANSMISSION CORPORATION
TEXACO, INC.,
TENNECO OIL COMPANY
HOUSTON OIL AND MINERALS CORPORATION
GULF OIL CORPORATION,
Intervenors

And Consolidated Cases

[Filed Nov. 4, 1983]

Before: Robinson, Chief Judge, Mikva and Scalia, Circuit Judges

ORDER

It is ORDERED by the Court that the opinion of the Court of August 9, 1983 is amended as follows:

from the second line of page thirty-three(33) delete the following:

all of the

Per Curiam

For the Court:

GEORGE A. FISHER
Clerk

By: /s/ Robert A. Bonner
ROBERT A. BONNER
Chief Deputy Clerk

APPENDIX E

NATURAL GAS POLICY ACT OF 1978

15 U.S.C. § 3301, *et seq.*

Section 2(29), 15 U.S.C. § 3301(29):

> MCF.—The term "Mcf", when used with respect to natural gas, means 1,000 cubic feet of natural gas measured at a pressure of 14.73 pounds per square inch (absolute) and a temperature of 60 degrees Fahrenheit.

Section 2(30), 15 U.S.C. § 3301(30):

> BTU.—The term "Btu" means British thermal unit.

Section 102, 15 U.S.C. § 3312:

(a) APPLICATION.—The maximum lawful price computed under subsection (b) shall apply to any first sale of natural gas delivered during any month in the case of—

> (1) new natural gas; and
>
> (2) natural gas produced from any old lease on the Outer Continental Shelf and qualifying under subsection (d) for the new natural gas ceiling price.

(b) MAXIMUM LAWFUL PRICE.—The maximum lawful price under this section for any month shall be—

> (1) $1.75 per million Btu's, in the case of April 1977; and
>
> (2) in the case of any month thereafter, the maximum lawful price, per million Btu's, prescribed under this subsection for the preceding month multiplied by the monthly equivalent of a factor equal to the sum of—

(A) the annual inflation adjustment factor applicable for such month; plus

(B) (i) .035, in the case of any month beginning before April 20, 1981; or

(ii) .04, in the case of any month beginning after April 20, 1981.

(c) DEFINITION OF NEW NATURAL GAS.—

(1) GENERAL RULE.—For the purposes of this section, the term "new natural gas" means each of the following categories of natural gas:

(A) NEW OCS LEASES.—Natural gas determined in accordance with section 503 to be produced from a new lease on the Outer Continental Shelf.

(B) NEW ONSHORE WELLS.—Natural gas determined in accordance with section 503 to be produced (other than from the Outer Continental Shelf) from—

(i) any new well which is 2.5 miles or more (determined in accordance with paragraph (2)) from the nearest marker well; or

(ii) any completion location, of any new well, which is located at a depth at least 1,000 feet below the deepest completion location of each marker well within 2.5 miles (determined in accordance with paragraph (2)) of such new well.

(C) NEW ONSHORE RESERVOIRS.—

(i) GENERAL RULE.—Except as provided in clauses (ii) and (iii), natural gas determined in accordance with section 503 to be produced (other than from the Outer Con-

tinental Shelf) from a reservoir from which natural gas was not produced in commercial quantities before April 20, 1977.

(ii) BEHIND-THE-PIPE EXCLUSION.—Clause (i) shall not apply to natural gas produced from any reservoir if—

(I) the reservoir was penetrated before April 20, 1977, by an old well from which natural gas or crude oil was produced in commercial quantities (whether or not such production was from such reservoir); and

(II) natural gas could have been produced in commercial quantities from such reservoir through such old well before April 20, 1977.

(iii) WITHELD GAS EXCLUSION.—Clause (i) shall not apply to natural gas produced from any reservoir—

(I) if such natural gas is produced through an old well; and

(II) subject to clause (iv), suitable facilities for the production and delivery to a pipeline of such natural gas were in existence on April 20, 1977.

(iv) EMERGENCY SALE FACILITIES.—The criteria of clause (iii) (II) shall not be considered to be met by reason of the existence of production and delivery facilities which were installed to carry out sales and deliveries of natural gas—

(I) under section 6 of the Emergency Natural Gas Act of 1977; or

(II) under the emergency sale authority pursuant to Opinion 699-B issued by the Federal Power Commission under section 7(c) of the Natural Gas Act.

(2) DETERMINATIONS OF DISTANCE.—For purposes of determining the distance from any new well to any marker well—

(A) SURFACE LOCATION TO SURFACE LOCATION.—The measurement shall be the horizontal distance from the surface location of the new well to the surface location of the marker well—

(i) in any case in which the new well meets requirements for the nondirectional drilling of wells prescribed by the appropriate State or Federal agency having regulatory jurisdiction over the drilling of such well; or

(ii) in any case in which—

(I) the surface drilling of such new well began on or after February 19, 1977;

(II) production of natural gas in commercial quantities began from such well before the date of the enactment of this Act; and

(III) the drilling of such well was not subject to any requirement regarding directional or nondirectional drilling, or the drilling of such well was subject to requirements regarding directional drilling but such requirements did not necessitate the obtaining of any permit or other certificate before drilling began.

(B) COMPLETION LOCATION TO SURFACE LOCATION.—In the case of any new well which is not covered by subparagraph (A), the measurements shall be the horizontal distance from—

(i) the closest point of any completion location of the new well, vertically projected to the same elevation as the surface location of the nearest marker well; to

(ii) the surface location of such marker well.

(3) DETERMINATION OF COMMERCIAL QUANTITIES.—For purposes of determining whether production of natural gas has occurred in commercial quantities under paragraph (1)(C)—

(A) a rebuttable presumption exists that production from a reservoir in commercial quantities has not occurred if natural gas has not been sold and delivered from such reservoir before April 20, 1977; and

(B) quantities of natural gas sold in interstate commerce (within the meaning of the Natural Gas Act) shall not be taken into account if such quantities were sold before the date of the enactment of this Act—

(i) under section 6 of the Emergency Natural Gas Act of 1977; or

(ii) under the emergency sale authority pursuant to Opinion 699-B issued by the Federal Power Commission under section 7 (c) of the Natural Gas Act.

(4) NEW WELLS WHICH ARE ALSO MARKER WELLS.—For purposes of applying paragraph (c)(1)(B)(ii) in the case of any marker well which is also a new well under section 2(3)(B), the reference in such

paragraph (c)(1)(B)(ii) to the deepest completion location of any marker well shall be deemed to be a reference to any subsurface location from which natural gas was produced in commercial quantities after January 1, 1970, and before February 19, 1977.

(d) OCS GAS QUALIFYING FOR NEW NATURAL GAS CEILING PRICE.—For the purposes of this section—

(1) OCS RESERVOIRS DISCOVERED ON OR AFTER JULY 27, 1976.—Natural gas determined in accordance with section 503 to be produced from an old lease on the Outer Continental Shelf shall qualify for the new natural gas ceiling price if such natural gas is produced from a reservoir which was not discovered before July 27, 1976.

(2) RESERVOIRS PENETRATED BEFORE JULY 27, 1976.—For purposes of paragraph (1), a reservoir shall be considered as having been discovered before July 27, 1976, if—

(A) such reservoir was penetrated by a well before July 27, 1976; and

(B) with respect to such well—

(i) the results of any production test meeting the requirements of OCS Order No. 4 demonstrate that, as of the time of such test, the reservoir is capable of producing in paying quantities (within the meaning of such Order);

(ii) any production capability evidence meeting the requirements of OCS Order No. 4 demonstrates that, as of the time such evidence is obtained, the reservoir is capable of producing in paying quantities (within the meaning of such Order); or

(iii) subject to paragraph (3), an induction-electric log, sidewall cores and core

analysis, or a wire line formation test indicates that, as of the time of such test, the reservoir is commercially producible.

(3) EFFECT OF NEGATIVE PRODUCTION CAPABILITY TESTS.—For purposes of paragraph (1), a reservoir shall not be considered as having been discovered before July 27, 1976, by the penetration of such reservoir by a well before July 27, 1976, if, with respect to such well—

(A) a production test meeting the requirements of OCS Order No. 4 was performed and the results of such test fail to demonstrate that, as of the time of such test, such reservoir was capable of producing in paying quantities (within the meaning of such Order); and

(B) production capability evidence meeting the requirements of OCS Order No. 4 does not exist or, if existing, does not demonstrate that, as of the date such evidence was obtained, such reservoir was capable of producing in paying quantities (within the meaning of such Order).

(4) BURDEN OF PROOF.—For purposes of paragraph (1), the producer shall have the burden of showing that—

(A) no test described in paragraph (2)(B)(i) or (iii) was performed and no evidence described in paragraph (2)(B)(ii) or (iii) exists; or

(B) if any such test was performed or such evidence exists, the results of such test or such evidence do not provide the applicable demonstration or indication specified under paragraph (2).

(5) DEFINITION OF OCS ORDER NO. 4.—For purposes of this subsection, the term "OCS Order No. 4"

means the order numbered 4 of the Conservation Division, Geological Survey, Department of the Interior, as approved by the Chief of the Conservation Division on August 28, 1969.

(e) EXCLUSION OF CERTAIN ALASKA NATURAL GAS.—The preceding provisions of this section shall not apply to any natural gas produced from the Prudhoe Bay Unit of Alaska and transported through the natural gas transportation system approved under the Alaska Natural Gas Transportation Act of 1976.

Section 103, 15 U.S.C. § 3313:

(a) APPLICATION.—In the case of natural gas determined in accordance with section 503 to be produced from any new, onshore production well, the maximum lawful price computed under subsection (b) shall apply to any first sale of such natural gas delivered during any month.

(b) MAXIMUM LAWFUL PRICE.—

(1) GENERAL RULE.—The maximum lawful price under this section for any month shall be—

(A) $1.75 per million Btu's, in the case of April 1977; and

(B) in the case of any month thereafter, the maximum lawful price, per million Btu's, prescribed under this paragraph for the preceding month multiplied by the monthly equivalent of the annual inflation adjustment factor applicable for such month.

(2) PRODUCTION AFTER 1984 FROM WELLS 5,000 FEET OR LESS IN DEPTH.—Effective beginning with the month of January 1985 and in any month thereafter, in the case of any first sale of natural gas which was not committed or dedicated to interstate commerce on April 20, 1977, and which is produced from a new, onshore production well from a comple-

tion location located at a depth of 5,000 feet or less, the maximum lawful price under this section for any such natural gas delivered during any month shall be a price which is midway between—

(A) the maximum lawful price, per million Btu's computed for such month under section 102 (relating to new natural gas); and

(B) the maximum lawful price, per million Btu's, computed for such month under paragraph (1).

(c) DEFINITION OF NEW, ONSHORE PRODUCTION WELL.—For purposes of this section, the term "new, onshore production well" means any new well (other than a well located on the Outer Continental Shelf)—

(1) the surface drilling of which began on or after February 19, 1977;

(2) which satisfies applicable Federal or State well-spacing requirements, if any; and

(3) which is not within a proration unit—

(A) which was in existence at the time the surface drilling of such well began;

(B) which was applicable to the reservoir from which such natural gas is produced; and

(C) which applied to a well (i) which produced natural gas in commercial quantities or (ii) the surface drilling of which was begun before February 19, 1977, and which was thereafter capable of producing natural gas in commercial quantities.

(d) EXCLUSION OF CERTAIN ALASKA NATURAL GAS.—The preceding provisions of this section shall not apply to any natural gas produced from the Prudhoe Bay Unit of Alaska and transported through the natural gas trans-

portation system approved under the Alaska Natural Gas Transportation Act of 1978.

Section 104, 15 U.S.C. § 3314:

(a) APPLICATION.—In the case of natural gas committed or dedicated to interstate commerce on the day before the date of the enactment of this Act and for which a just and reasonable rate under the Natural Gas Act was in effect on such date for the first sale of such natural gas, the maximum lawful price computed under subsection (b) shall apply to any first sale of such natural gas delivered during any month.

(b) MAXIMUM LAWFUL PRICE.—

(1) GENERAL RULE.—The maximum lawful price under this section for any month shall be the higher of—

(A) (i) the just and reasonable rate, per million Btu's established by the Commission which was (or would have been) applicable to the first sale of such natural gas on April 20, 1977, in the case of April 1977; and

(ii) in the case of any month thereafter, the maximum lawful price, per million Btu's, prescribed under this subparagraph for the preceding month multiplied by the monthly equivalent of the annual inflation adjustment factor applicable for such month, or

(B) any just and reasonable rate which was established by the Commission after April 27, 1977, and before the date of the enactment of this Act and which is applicable to such natural gas.

(2) CEILING PRICES MAY BE INCREASED IF JUST AND REASONABLE.—The Commission may, by rule or order, prescribe a maximum lawful ceiling price, ap-

plicable to any first sale of any natural gas (or category thereof, as determined by the Commission) otherwise subject to the preceding provisions of this section, if such price is—

(A) higher than the maximum lawful price which would otherwise be applicable under such provisions; and

(B) just and reasonable within the meaning of the Natural Gas Act.

Section 105, 15 U.S.C. § 3315:

(a) APPLICATION.—The maximum lawful price computed under subsection (b) shall apply to any first sale of natural gas delivered during any month in the case of natural gas, sold under any existing contract or any successor to an existing contract, which was not committed or dedicated to interstate commerce on the day before the date of the enactment of this Act.

(b) MAXIMUM LAWFUL PRICE.—

(1) GENERAL RULE.—Subject to paragraphs (2) and (3), the maximum lawful price under this section shall be the lower of—

(A) the price under the terms of the existing contract, to which such natural gas was subject on the date of the enactment of this Act, as such contract was in effect on such date; or

(B) the maximum lawful price, per million Btu's, computed for such month under section 102 (relating to new natural gas).

(2) CONTRACT PRICE EXCEEDING NEW GAS CEILING PRICE ON ENACTMENT.—In the case of any natural gas described in subsection (a) for which the contract price applicable on the date of the enactment of this Act exceeds the maximum lawful price, per mil-

lion Btu's, computed for such date under section 102 (relating to new natural gas), the maximum lawful price under this section shall be the higher of—

(A) the maximum lawful price, per million Btu's, computed for such month under section 102; or

(B) (i) the contact price on the date of the enactment of this Act, in the case of the month in which this Act is enacted; and

(ii) in the case of any month thereafter, the maximum lawful price, per million Btu's, prescribed under this subparagraph for the preceding month multiplied by the monthly equivalent of the annual inflation adjustment factor applicable for such month.

(3) PRICE INCREASES RESULTING FROM INDEFINITE PRICE ESCALATOR CLAUSES.—

(A) IN GENERAL.—Effective January 1985, and each month thereafter, in the case of any first sale of natural gas, which is sold at a price established under any indefinite price escalator clause of any existing contract or successor to an existing contract and for which the contract price on December 31, 1984, is higher than $1.00 per million Btu's, the maximum lawful price under this section for any such natural gas delivered during any month shall be the higher of—

(i) the maximum lawful price, per million Btu's, computed under paragraph (2) (B); or

(ii) (I) in the case of January 1985, the maximum lawful price, per million Btu's computed under section 102 (relating to new natural gas) for such month; and

(II) in the case of any month thereafter, the maximum lawful price, per million Btu's, prescribed under this clause for the immediately preceding month multiplied by the monthly equivalent of the sum of a factor equal to the annual inflation adjustment factor applicable for such month plus .03.

(B) DEFINITION OF INDEFINITE PRICE ESCALATOR CLAUSE.—For purposes of this paragraph, the term "indefinite price escalator clause" includes any provision of any contract—

(i) which provides for the establishment or adjustment of the price for natural gas delivered under such contract by reference to other prices for natural gas, for crude oil, or for refined petroleum products; or

(ii) which allows for the establishment or adjustment of the price of natural gas delivered under such contract by negotiation between the parties.

(C) CONTRACT MODIFICATIONS AFTER MAY 3, 1978, TO BE DISREGARDED.—In the case of any natural gas which was subject to any contract on May 3, 1978, that contained an indefinite price escalator clause on such date, no amendment to or modification of the operation of such contract made after such date may have the effect of limiting or precluding the application of this paragraph on or after January 1, 1985, to prices allowed with respect to such natural gas.

(D) EXCLUSION.—Subparagraph (A) shall not apply to any first sale of new natural gas (as defined in section 102(c)), stripper well natural gas (as defined in section 108(b)), high-cost natural gas (as defined in section 107(c)), natural gas produced from a new, onshore pro-

duction well (as defined in section 103(c)) from a completion location located at a depth of more than 5,000 feet, and, beginning July 1, 1987, or, if later, the date of expiration of any price controls reimposed under section 122, natural gas produced from any new, onshore production well (as defined in section 103(c)) from a completion location located at a depth of 5,000 feet or less.

(c) DEFINITION OF CONTRACT PRICE.—For purposes of this section, the term "contract price", when used with respect to any specific date, means—

(1) the price paid, per million Btu's, under a contract for deliveries of natural gas occurring on such date; or

(2) if no deliveries of natural gas occurred under such contract on such date, the price, per million Btu's, that would have been paid had such deliveries occurred on such date.

Section 106, 15 U.S.C. § 3316:

(a) INTERSTATE ROLLOVER CONTRACTS.—In the case of any first sale under any rollover contract of natural gas which was committed or dedicated to interstate commerce on the day before the date of the enactment of this Act, the maximum lawful price under this subsection for such natural gas delivered during any month shall be the higher of—

(1)(A) in the case of the month in which the effective date of such rollover contract occurs, the just and reasonable rate, if any, per million Btu's, established by the Commission and applicable on such date to the natural gas subject to the expired contract; and

(B) in the case of any month thereafter, the maximum lawful price, per million Btu's, prescribed un-

der this paragraph for the preceding month multiplied by the monthly equivalent of the annual inflation adjustment factor applicable for such month; or

(2) (A) $0.54 per million Btu's, in the case of April 1977; and

(B) in the case of any month thereafter, the maximum lawful price, per million Btu's, prescribed under this paragraph for the preceding month multiplied by the monthly equivalent of the annual inflation adjustment factor applicable for such month. For purposes of this subsection, the term "rollover contract" includes any contract which would have been a rollover contract but for the fact that the expiration of the previous contract occurred prior to the day before the date of the enactment of this Act.

(b) INTERSTATE ROLLOVER CONTRACTS.—

(1) GENERAL RULE.—In the case of any first sale under any rollover contract of natural gas which was not committed or dedicated to interstate commerce on the day before the date of the enactment of this Act, the maximum lawful price under this subsection for such natural gas delivered during any month shall be the higher of—

(A) (i) the maximum price paid under the expired contract, per million Btu's, in the case of the month in which the effective date of such rollover contract occurs; and

(ii) in the case of any month thereafter, the maximum lawful price, per million Btu's, prescribed under this subparagraph for the preceding month multiplied by the monthly equivalent of the annual inflation adjustment factor applicable for such month; or

(B) (i) $1.00 per million Btu's, in the case of April 1977; and

(ii) in the case of any month thereafter, the maximum lawful price, per million Btu's, prescribed under this subparagraph for the preceding month multiplied by the monthly equivalent of the annual inflation adjustment factor applicable for such month.

(2) CERTAIN STATE OR INDIAN PRODUCTION OR ROYALTY SHARES.—

(A) GENERAL RULE.—In the case of any first sale under any rollover contract of natural gas which was not committed or dedicated to interstate commerce on the day before the date of the enactment of this Act and which constitutes a State government's or Indian tribe's natural gas production, or royalty share or other interest (as of such day) in natural gas production, from real property (including subsurface mineral interests) owned on the date of the enactment of this Act by such State government or Indian tribe (as the case may be, the maximum lawful price under this subsection for any such natural gas delivered during any month shall be the maximum lawful price, per million Btu's, computed for such month under section 102 (relating to new natural gas).

(B) INDIAN TRIBAL LANDS.—For purposes of this paragraph, land shall be considered to be owned by an Indian tribe only if—

(i) such land is owned directly by such tribe; or

(ii) such land is held by the United States or any State in trust for Indian persons and is located within the boundaries of an Indian reservation (as such boundaries were in effect on the date of the enactment of this Act).

(C) DEFINITIONS.—For purposes of this paragraph—

(i) STATE GOVERNMENT.—The term "State government" means any State or any agency, instrumentality, or political subdivision of a State.

(ii) INDIAN TRIBE.—The term "Indian tribe" means any Indian tribe recognized as eligible for services provided by the Secretary of the Interior to Indians.

(c) CEILING PRICES MAY BE INCREASED IF JUST AND REASONABLE.—The Commission may, by rule or order, prescribe a maximum lawful price, applicable to any first sale of any natural gas (or category thereof, as determined by the Commission) otherwise subject to the preceding provisions of this section, if such price is—

(1) higher than the maximum lawful price which would otherwise be applicable under such provisions; and

(2) just and reasonable within the meaning of the Natural Gas Act.

Section 107, 15 U.S.C. § 3317:

(a) WELLS COMPLETED BELOW 15,000 FEET.—In the case of any first sale of high-cost natural gas produced from any well the surface drilling of which began on or after February 19, 1977, if such production is from any completion location which is located at a depth of more than 15,000 feet, the maximum lawful price under this section for such natural gas delivered during any month shall be the maximum lawful price, per million Btu's, computed for such month under section 102 (relating to new natural gas).

(b) COMMISSION AUTHORITY TO PRESCRIBE HIGHER INCENTIVE PRICES.—The Commission may, by rule or order,

prescribe a maximum lawful price, applicable to any first sale of any high-cost natural gas, which exceeds the otherwise applicable maximum lawful price to the extent that such special price is necessary to provide reasonable incentives for the production of such high-cost natural gas.

(c) DEFINITION OF HIGH-COST NATURAL GAS.—For purposes of this section, the term "high-cost natural gas" means natural gas determined in accordance with section 503 to be—

(1) produced from any well the surface drilling of which began on or after February 19, 1977, if such production is from a completion location which is located at a depth of more than 15,000 feet;

(2) produced from geopressured brine;

(3) occluded natural gas produced from coal seams;

(4) produced from Devonian shale; and

(5) produced under such other conditions as the Commission determines to present extraordinary risks or costs.

(d) PROVISIONS FOR HIGH-COST NATURAL GAS TO BE ELECTIVE.—If any credit, exemption, deduction, or comparable adjustment applicable to the computation of any Federal tax is specifically allowable with respect to any high-cost natural gas (or category thereof) under any provision of law enacted after the date of the enactment of this Act, the provisions of subsections (a) and (b) of this section and the provisions of subtitle B shall not apply to such natural gas produced from any well unless an election to have such provisions apply (in lieu of such credit, exemption, deduction, or adjustment) with respect to such natural gas produced from such well is filed with the Commission on or before the later of—

(A) the 30th day after the date of the enactment of the Act under which such credit, exemption, deduction, or adjustment is provided; or

(B) the date the surface drilling of such well began.

Section 108, 15 U.S.C. § 3318:

(a) GENERAL RULE.—In the case of any first sale of stripper well natural gas the maximum lawful price under this section for such natural gas delivered during any month shall be—

(1) $2.09 per million Btu's, in the case of May 1978; and

(2) in the case of any month thereafter, the maximum lawful price, per million Btu's, prescribed under this subsection for the preceding month multiplied by the monthly equivalent of a factor equal to the sum of—

(A) the annual inflation adjustment factor applicable for such month; plus

(B) (i) .035, in the case of any month beginning before April 20, 1981; or

(ii) .04, in the case of any month beginning after April 20, 1981.

(b) DEFINITION OF STRIPPER WELL NATURAL GAS.—

(1) GENERAL RULE.—Except as provided in paragraph (2), the term "stripper well natural gas" means natural gas determined in accordance with section 503 to be nonassociated natural gas produced during any month from a well if—

(A) during the preceding 90-day production period, such well produced nonassociated natural gas at a rate which did not exceed an average

of 60 Mcf per production day during such period; and

(B) during such period such well produced at its maximum efficient rate of flow, determined in accordance with recognized conservation practices designed to maximize the ultimate recovery of natural gas.

(2) PRODUCTION IN EXCESS OF 60 MCF.—The Commission shall, by rule, provide that, if nonassociated natural gas produced from a well which previously qualified as a stripper well under paragraph (1) exceeds an average of 60 Mcf per production day during any 90-day production period, such natural gas may continue to qualify as stripper well natural gas if the increase in nonassociated natural gas produced from such well was the result of the application of recognized enhanced recovery techniqes.

(3) DEFINITIONS.—For purposes of this subsection—

(A) PRODUCTION DAY.—The term "production day" means—

(i) any day during which natural gas is produced; and

(ii) any day during which natural gas is not produced if production during such day is prohibited by a requirement of State law or a conservation practice recognized or approved by the State agency having regulatory jurisdiction over the production of natural gas.

(B) 90-DAY PRODUCTION PERIOD.—The term "90-day production period" means any period of 90 consecutive calendar days excluding any day during which natural gas is not produced for reasons other than voluntary action of any per-

son with the right to control production of natural gas from such well.

(C) NONASSOCIATED NATURAL GAS.—The term "nonassociated natural gas" means natural gas which is not produced in association with crude oil.

Section 109, 15 U.S.C. § 3319:

(a) APPLICATION.—The maximum lawful price computed under subsection (b) shall apply to any first sale of any natural gas delivered during any month, in the case of any natural gas which is not covered by any maximum lawful price under any other section of this subtitle, including—

(1) natural gas produced from any new well not otherwise qualifying for a higher maximum lawful price under this title;

(2) natural gas committed or dedicated to interstate commerce on the day before the date of the enactment of this Act and for which a just and reasonable rate under the Natural Gas Act was not in effect on such date for the first sale of such natural gas;

(3) natural gas which was not committed or dedicated to interstate commerce on the day before the date of the enactment of this Act and which was not subject to an existing contract on such day; and

(4) natural gas produced from the Prudhoe Bay Unit of Alaska and transported through the natural gas transportation system approved under the Alaska Natural Gas Transportation Act of 1976.

(b) MAXIMUM LAWFUL PRICE.—

(1) The maximum lawful price under this section for any month shall be—

(A) $1.45 per million Btu's, in the case of April 1977; and

(B) in the case of any month thereafter, the maximum lawful price, per million Btu's, prescribed under this paragraph for the preceding month multiplied by the monthly equivalent of the annual inflation adjustment factor applicable for such month.

(2) CEILING PRICES MAY BE INCREASED IF JUST AND REASONABLE.—The Commission may, by rule or order, prescribe a maximum lawful ceiling price, applicable to any first sale of any natural gas (or category thereof, as determined by the Commission) otherwise subject to the preceding provisions of this section, if such price is—

(A) higher than the maximum lawful price which would otherwise be applicable under such provisions; and

(B) just and reasonable within the meaning of the Natural Gas Act.

Sections 501(a), (b), 15 U.S.C. §§ 3411(a), (b):

(a) IN GENERAL.—Except where expressly provided otherwise, the Commission shall administer this chapter. The Commission, or any other Federal officer or agency in which any function under this Act is vested or delegated, is authorized to perform any and all acts (including any appropriate enforcement activity), and to prescribe, issue, amend, and rescind such rules and orders as it may find necessary or appropriate to carry out its functions under this chapter.

(b) AUTHORITY TO DEFINE TERMS.—Except where otherwise expressly provided, the Commission is authorized to define, by rule, accounting, technical, and trade terms used in this Act. Any such defini-

tion shall be consistent with the definitions set forth in this chapter.

Section 506(a), 15 U.S.C. § 3416(a):

(a) ORDERS.—

(1) IN GENERAL.—The provisions of this subsection shall apply to judicial review of any order, within the meaning of section 551(6) of title 5, United States Code (other than an order assessing a civil penalty under section 504(b)(4) or any order under section 302 or any order under section 303), issued under this chapter and to any final agency action under this chapter required to be made on the record after an opportunity for an agency hearing.

(2) REHEARING.—Any person aggrieved by any order issued by the Commission in a proceeding under this chapter to which such person is a party may apply for a rehearing within 30 days after the issuance of such order. Any application for rehearing shall set forth the specific ground upon which such application is based. Upon the filing of such application, the Commission may grant or deny the requested rehearing or modify the original order without further hearing. Unless the Commission acts upon such application for rehearing within 30 days after it is filed, such application shall be deemed to have been denied. No person may bring an action under this section to obtain judicial review of any order of the Commission unless—

(A) such person shall have made application to the Commission for a hearing under this subsection; and

(B) the Commission shall have finally acted with respect to such application.

For purposes of this section, if the Commission fails to act within 30 days after the filing of such applica-

tion, such failure to act shall be deemed final agency action with respect to such application.

(3) AUTHORITY TO MODIFY ORDERS.—At any time before the filing of the record of a proceeding in a United States Court of Appeals, pursuant to paragraph (4), the Commission may, after providing notice it determines reasonable and proper, modify or set aside, in whole or in part, any order issued under the provisions of this chapter.

(4) JUDICIAL REVIEW.—Any person who is a party to a proceeding under this chapter aggrieved by any final order issued by the Commission in such proceeding may obtain review of such order in the United States Court of Appeals for any circuit in which the party to which such order relates is located or has its principal place of business, or in the United States Court of Appeals for the District of Columbia circuit. Review shall be obtained by filing a written petition, requesting that such order be modified or set aside in whole or in part, in such Court of Appeals within 60 days after the final action of the Commission on the application for rehearing required under paragraph (2). A copy of such petition shall forthwith be transmitted by the clerk of such court to any member of the Commission and thereupon the Commission shall file with the court the record upon which the order complained of was entered, as provided in section 2112 of title 28, United States Code. Upon the filing of such petition such court shall have jurisdiction, which upon the filing of the record with it shall be exclusive, to affirm, modify, or set aside such order in whole or in part. No objection to such order of the Commission shall be considered by the court if such objection was not urged before the Commission in the application for rehearing unless there was reasonable ground for the failure to do so. The finding of the Commission

as to the facts, if supported by substantial evidence, shall be conclusive. If any party shall apply to the court for leave to adduce additional evidence, and shall show to the satisfaction of the court that such additional evidence is material and that there were reasonable grounds for failure to adduce such evidence in the proceedings before the Commission, the court may order such additional evidence to be taken before the Commission and to be adduced upon the hearing in such manner and upon such terms and conditions as the court deems proper. The Commission may modify its findings as to the facts by reason of the additional evidence so taken, and shall file with the court such modified or new findings, which if supported by substantial evidence, shall be conclusive. The Commission shall also file with the court its recommendation, if any, for the modification or setting aside of the original order. The judgment and decree of the court, affirming, modifying, or setting aside, in whole or in part, any such order of the Commission, shall be final subject to review by the Supreme Court of the United States upon certiorari or certification as provided in section 1254 of title 28, United States Code.

(5) ORDERS REMAIN EFFECTIVE.—The filing of an application for rehearing under paragraph (2) shall not, unless specifically ordered by the Commission, operate as a stay of the Commission's order. The commencement of proceedings under paragraph (4) shall not, unless specifically ordered by the court, operate as a stay of the Commission's order.

NATURAL GAS ACT,

15 U.S.C. § 717, *et seq.*

Section 16, 15 U.S.C. § 717o:

> The Commission shall have power to perform any and all acts, and to prescribe, issue, make, amend, and rescind such orders, rules, and regulations as it may find necessary or appropriate to carry out the provisions of this chapter. Among other things, such rules and regulations may define accounting, technical, and trade terms used in this chapter; and may prescribe the form or forms of all statements, declarations, applications, and reports to be filed with the Commission, the information which they shall contain, and the time within which they shall be filed. Unless a different date is specified therein, rules and regulations of the Commission shall be effective thirty days after publication in the manner which the Commission shall prescribe. Orders of the Commission shall be effective on the date and in the manner which the Commission shall prescribe. For the purposes of its rules and regulations, the Commission may classify persons and matters within its jurisdiction and prescribe different requirements for different classes of persons or matters. All rules and regulations of the Commission shall be filed with its secretary and shall be kept open in convenient form for public inspection and examination during reasonable business hours.

Sections 19(a), (b), 15 U.S.C. § 717r(a), (b)

> (a) Any person, State, municipality, or State commission aggrieved by an order issued by the Commission in a proceeding under this Chapter to which such person, State, municipality, or State commission is a party may apply for a rehearing within thirty days after the issuance of such order. The application for rehearing shall set forth specifically

the ground or grounds upon which such application is based. Upon such application the Commission shall have power to grant or deny rehearing or to abrogate or modify its order without further hearing. Unless the Commission acts upon the application for rehearing within thirty days after it is filed, such application may be deemed to have been denied. No proceeding to review any order of the Commission shall be brought by any person unless such person shall have made application to the Commission for a rehearing thereon. Until the record in a proceeding shall have been filed in a court of appeals, as provided in subsection (b), the Commission may at any time, upon reasonable notice and in such manner as it shall deem proper, modify or set aside, in whole or in part, any finding or order made or issued by it under the provisions of this chapter.

(b) Any party to a proceeding under this Chapter aggrieved by an order issued by the Commission in such proceeding may obtain a review of such order in the court of appeals of the United States for any circuit wherein the natural-gas company to which the order relates is located or has its principal place of business, or in the United States Court of Appeals for the District of Columbia, by filing in such court, within sixty days after the order of the Commission upon the application for rehearing, a written petition praying that the order of the Commission be modified or set aside in whole or in part. A copy of such petition shall forthwith be transmitted by the clerk of the court to any member of the Commission and thereupon the Commission shall file with the court the record upon which the order complained of was entered, as provided in section 2112 of title 28, United States Code. Upon the filing of such petition such court shall have jurisdiction, which upon the filing of the record with it shall be

exclusive, to affirm, modify, or set aside such order in whole or in part. No objection to the order of the Commission shall be considered by the court unless such objection shall have been urged before the Commission in the application for rehearing unless there is reasonable ground for failure so to do. The finding of the Commission as to the facts, if supported by substantial evidence, shall be conclusive. If any party shall apply to the court for leave to adduce additional evidence, and shall show to the satisfaction of the court that such additional evidence is material and that there were reasonable grounds for failure to adduce such evidence in the proceedings before the Commission, the court may order such additional evidence to be taken before the Commission and to be adduced upon the hearing in such manner and upon such terms and conditions as to the court may seem proper. The Commission may modify its findings as to the facts by reason of the additional evidence so taken, and it shall file with the court such modified or new findings, which if supported by substantial evidence, shall be conclusive, and its recommendation, if any, for the modification or setting aside of the original order. The judgment and decree of the court, affirming, modifying, or setting aside, in whole or in part, any such order of the Commission, shall be final, subject to review by the Supreme Court of the United States upon certiorari or certification as provided in sections 239 and 240 of Title 28.

FEDERAL POWER ACT

16 U.S.C. § 791a, *et seq.*

Section 309, 16 U.S.C. § 825h

The Commission shall have power to perform any and all acts, and to prescribe, issue, make, amend, and rescind such orders, rules, and regulations as it may find necessary or appropriate to carry out the provisions of this chapter. Among other things, such rules and regulations may define accounting, technical, and trade terms used in this chapter; and may prescribe the form or forms of all statements, declarations, applications, and reports to be filed with the Commission, the information which they shall contain, and the time within which they shall be filed. Unless a different date is specified therein, rules and regulations of the Commission shall be effective thirty days after publication in the manner which the Commission shall prescribe. Orders of the Commission shall be effective on the date and in the manner which the Commission shall prescribe. For the purposes of its rules and regulations, the Commission may classify persons and matters within its jurisdiction and prescribe different requirements for different classes of persons or matters. All rules and regulations of the Commission shall be filed with its secretary and shall be kept open in convenient form for public inspection and examination during reasonable business hours.

APPENDIX F

REGULATIONS

18 C.F.R. § 270.204 (1983)

§ 270.204. Btu content per cubic foot of natural gas.

(a) *Measurement.* The Btu content of one cubic foot of natural gas under the standard conditions specified in paragraph (b) of this section is the number of Btu's produced by the complete combustion of such cubic foot of gas, at constant pressure with air of the same temperature and pressure as the gas, when the products of combustion are cooled to the initial temperature of the gas and air and when the water formed by such combustion is condensed to a liquid state.

(b) *Standard conditions.* The standard conditions for purposes of paragraph (a) of this section are as follows: The gas is saturated with water vapor at 60 degrees Fahrenheit under a pressure equivalent to that of 30.00 inches of mercury at 32 degrees Fahrenheit, under standard gravitational force (980.665 centimeters per second squared).

(c) *Application of the maximum lawful price.* The maximum lawful price prescribed by the NGPA and this part for any first sale of natural gas applies to the Btu's actually delivered in that first sale.

APPENDIX G

NATURAL GAS CONTRACT MEASUREMENT AND QUALITY CLAUSES

GAS MEASUREMENT COMMITTEE REPORT

NO. 4A

FIRST EDITION

AUGUST 1971

AGA

AMERICAN GAS ASSOCIATION

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GAS MEASUREMENT COMMITTEE
(REPORT NO. 4A)

REPORT ON
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MEASUREMENT AND QUALITY CLAUSES

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THE TASK GROUP
ON
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A.G.A. MEASUREMENT COMMITTEE

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A.G.A. MEASUREMENT COMMITTEE REPORT ON GAS CONTRACTS

INTRODUCTION

Along with the Measurement Committee's continuous study of developments concerning methods and procedures applicable to the measurement of natural gas, the resultant effects on the requirements of the gas contract are closely watched. This is the initiation of our published reporting on gas contracts and, as with the other technical reports of this committee, the plan is to revise this report as found necessary to keep the industry adequately informed on the subject.

This report is offered for information purposes only and is not represented as a standard. The information herein is given with the thought that the attainment of the greatest possible accuracy and agreement between contracting parties might be achieved through uniform practices. It is hoped that the report may (1) encourage universal endeavor for practical accuracy of gas measurement within established commercial tolerances, rather than for impractical theoretical solutions or advantageous positions; (2) encourage adoption of the American National Standard base conditions for gas measurement units; (3) encourage willingness to follow the industry in its adoption of changes for the purpose of improving accuracy and providing more uniform results; (4) encourage uniformity in contract measurement and gas quality clause wording; (5) encourage reliance upon the ability of the measurement people of the respective gas companies to obtain the highest possible accuracy through the use of applicable A.G.A. Measurement Committee publications; (6) encourage the attainment of brevity in the gas contract measurement clause through the use of references to A.G.A. Measurement Committee publications.

The A.G.A. Gas Measurement Committee maintains continuous liaison with others involved in researching gas measurement techniques throughout the world. It also sponsors within the structure of A.G.A. such gas measurement research undertakings as appear to be necessary for the purpose of clearing up any questions concerning the scope, accuracy and applicability of practices. Data from all available sources are considered in the development of recommendations.

The A.G.A. Measurement Committee Reports, covering the various phases of gas measurement, are provided as a source of information and an avenue of convenience to those writing gas contracts. Also they offer technical guidance to those charged with the responsibility for measuring gas under terms of such contracts. Contracts may be condensed, simplified and repetitious wordage can be avoided to the extent it is possible to employ standard units of measurement.

Assuming the aim of the gas measurement clause of any gas contract is to provide the greatest practical accuracy, this end is best served by the technical competence of the gas measurement specialists employed by the contracting parties. Gas contracts should be written in a manner which will permit such measurement specialists to best employ the type meter or meters, auxiliary devices and test equipment available.

The interdependence of the various segments of the natural gas industry gains added recognition with better communication. In recent years the fuel gas industry has made remarkable progress toward attaining general agreement in gas measurement practices through the use of published recommendations of the A.G.A. Measurement Committee. These publications include the "Gas Measurement Manual," "Gas Measurement Committee Report #3 on Orifice Meters," "Manual for the Determination of Supercompressibility Factors for Natural Gas," "Report on Recording Charts," "Energy Measure-

ment Report," "Displacement Meter Report," and other Reports related to gas measurement and gas quality. These Reports contain observations related to the measurement of gas and gas quality via instrumentation types and techniques in common use. In the contract measurement clause, A.G.A. Measurement Committee Reports may be referred to individually by title and date of issue and thus be made a part of the contract.

It is the intent of the A.G.A. Measurement Committee that its several Reports collectively provide full information on all normally used methods of measuring high pressure natural gas, as well as on natural gas quality measurements and specifications. The subjects covered include: Orifice Meters, Energy Measurement; Displacement Meters; Other Methods of Measurement, Units of Measurement; Recording Charts; Gas Accounting; Gas Quality Measurements; Measuring and Regulating Station Design; Natural Gas Contract-Measurement and Quality Clauses; Glossary of Gas Measurement and Gas Quality Terms.

The A.G.A. Measurement Committee does not recommend the type or make of meters or instruments to be employed in any instance. It merely provides suggestions to assist the operators to obtain commercial accuracy from the use of the metering systems of their own choice.

The A.G.A. Measurement Committee Report #3 is specifically provided as a reference covering orifice meter measurement. On the other hand, the manual concerning the determination of Supercompressibility Factors for natural gas, which by reference is made a part of Report #3, is actually applicable in the instance of both orifice meter and displacement meter measurements. The technicians will recognize the displacement meter supercompressibility multiplier as the square of the orifice meter supercompressibility factor. Generally speaking, the technicians responsible for the measurement and computation of gas volumes have available for their use

the latest issues of these and other publications of the A.G.A. Measurement Committee. In many companies those responsible for writing the gas contracts are also provided with these publications which are obtainable from A.G.A. Headquarters at a nominal cost.

It is recommended that the Gas Measurement and Gas Quality Clauses of Contracts be checked and approved by the responsible Gas Measurement people of each contracting party and the company legal departments before such contracts are officially signed. This is for the purpose of providing greater assurance that the statements, requirements, and references concerning measurement and gas quality are accurate, adequate, unencumbered with needless instructions and completely practical. The measurement man's familiarity with the gas quality and physical properties will help to assure that inherent characteristics are appropriately considered and, where applicable, are disposed of in the original pricing of the gas.

GAS MEASUREMENT UNITS

The Three Measurement Concepts

It is necessary for parties negotiating gas custody transfer contracts to first determine whether the gas is to be accounted for in units of Volume, Energy or Weight. At this time it appears that most large volume natural gas custody transfer measurement takes place on a Volumetric basis. However, measurement in Energy and Weight units has more recently been shown to be equally feasible. The Energy and Weight concepts combine the quantitative and qualitative parameters of gas measurement into a single unit of measure. As natural gas becomes more precious, the parties to gas sales contracts are more generally developing an awareness of the effect of thermal energy content on the intrinsic value of gas per unit volume. This understandably may lead to a wider use of energy and or weight units in large volume high pressure gas measurement.

Volumetric Measurement

The basic unit of gas in Volumetric measurement in a cubic foot of the gas under specific conditions of Pressure and Temperature.

In commercial measurement of natural gas by volume, the gas is generally accounted for in units of 1,000 cubic feet, which for brevity is called an Mcf. The common multiples of Mcf used in natural gas volume statics will be recognized as follows:

1 Mcf	1 thousand cu. ft.	
1,000 Mcf	1 million cu. ft.	1 MMcf
1,000,000 Mcf	1 billion cu. ft.	1 Bcf

The actual flowing volume of any gas at the pressure and temperature existing in the meter must be converted into equivalent volume at standard base pressure and temperature. Adhering to the English system of measure, gas pressure is expressed in pounds per square inch and gas temperature is expressed in degrees Fahrenheit (°F).

Contract base pressure is stated in pounds per square inch absolute, for which the abbreviation is "psia." The contract base temperature is generally expressed in °F because this term is readily recognizable by the layman, while (°F+460), the equivalent absolute temperature value known as degrees Rankine, is applied in the equations used in the computation of gas volumes.

American National Standard Z132.1—1969 reads as follows: "The base conditions of pressure and temperature for use in the volumetric measurement of natural gas shall be 14.73 psia and 60°F." (*Note*: For the information of those who might wonder how these base pressure and temperature values came into being, 14.73 was first used because it is the mean sea level atmospheric pressure in the U.S.A. (continental lower 48) expressed

in pounds per square inch rounded off to two decimal places, while 60°F was found to approximate the mean ambient temperature.)

The Federal Government has adopted the above National Standard pressure and temperature base in all of its dealings concerning natural gas. There is a serious need for those states which have not done likewise to do so even at the inconvenience of adjusting gas tax rates to nullify monetary effect. There is also a need for those gas companies which have not adopted this standard base to do so for the sake of equitable commodity exchange, and uniform statistics relative to production and reserves.

Energy Measurement

The Energy Unit is the British thermal unit (Btu), the heat required to raise the temperature of one pound of water one °F at mean sea level USA. Due to the small value of the Btu in thermal energy, the "therm" (100,000 Btu) and the "dekatherm" (1,000,000 Btu) are used for commodity transfer in energy units.

The actual number of Btu in a cubic foot of the gas at the specified contract base pressure and temperature conditions depends on the gas composition, where its thermal energy dimensions are found by calorimetry, fractional analysis or by empirical correlation involving the gas specific gravity and the contained inert compounds.

The trend appears to be toward the expression of Btu on an assumed dry gas basis as opposed to the antiquated water saturated basis since currently the actual condition of fuel gas transported to market in high pressure pipelines is essentially dry.

Gas energy measurement by conventional practice is achieved by two unrelated measurements; namely, gas volume metering to ascertain cubic feet of gas at given conditions and the determination of heat per unit of volume.

Approaches are open to the use of conventional mass and volume meters for direct energy readout, without secondary measurements in the field of calorimetry. Energy equations have been designed to take advantage of the physical properties of fuel gas, leading to orderly expression of its energy. Such equations account for non-combustible compounds present in solution as well as the combustible non-hydrocarbons which may be encountered with manufactured gas. The energy equations and other helpful information concerning energy measurement are provided in the A.G.A. Measurement Committee Energy Measurement Report.

In large volume gas measurement the "dekatherm" is the recommended energy billing unit, it being 1,000,000 Btu or one Mcf of 1,000 Btu/cf gas. Units of energy may also be expressed as megajoules, an international unit, or may be equated in kilowatt hours to facilitate comparison with electric energy. In contrast to measurement in cubical volume units, energy units combine the quantitative and qualitative parameters of gas measurements into a single unit of measure.

Weight Measurement

The Weight Unit of gas mass measurement is the pound avoirdupois. Measurement in terms of weight may be accomplished directly with true mass meters or indirectly by the use of the orifice meter or other inferential devices.

Weight meters and mass meters measure the weight or mass of a gas, respectively, without relationship to its cubical volume under any stated conditions of pressure and temperature. Thus, mass and weight meters function independent of pressure, temperature, specific gravity, and Boyle's law deviation. (This is not to suggest, however, that mass flow cannot be inferred from information obtainable through the use of volume meters.)

Although most mass measurements are expressed in pounds avoirdupois or pounds mass, obviously there are not limitations to the use of metric units—kilograms, for instance.

Weight and mass metering, like volume metering, is a quantitative measurement. However, in the instance of natural gases, freed of inert compounds, Btu per pound of gas is, within practical tolerances, a fixed ratio while Btu per unit volume tends to vary more widely.

It should be appreciated that a very slight difference may be found between the pound mass and the pound avoirdupois. Where weight units (pound avoirdupois) vary slightly with gravitational forces, mass units (pound mass) are not noticeably affected by earth's gravity.

QUALITY OF GAS—DISCUSSION

The typical natural gas transmission company transporting fuel gas for resale gathers its supply wherever it may be found over a wide geographical area from field producers, processing plants and other pipelines. The weighted average composition of the gas supply determines the quality of the composite stream of the natural gas transmission system. With field processing through efficient dehydrators and liquid separators, a major portion of the natural gas discovered will satisfy the practical criteria for fuel gas quality. In regard to those constituents which must be limited as to either maximum or minimum amounts, such limitations must all be specified in the transmission company's gas purchase contracts. The control of fuel gas quality must be vested in the field gas purchase function since it can not be economically performed after the purchased gas is comingled in the transmission stream. Consequently, the quality clause of the natural gas transmission company's gas sales tariff can in turn, with effectiveness, only set up allowable operating tolerances relative to the composition of the established transmission stream.

Commercial quality fuel gas or so-called fuel quality natural gas is that which meets the quality specifications of the applicable gas purchase contract or sales tariff. Although commercial fuel quality natural gas transported by pipelines to the wholesale market is normally a relatively pure commodity, the presence of more or less predictable quantities of condensible liquids, diluents and impurities must be anticipated and should be taken into account in establishing allowable tolerances relative to gas quality.

The physical-chemical properties, impurities and conditions on which allowable maximum or minimum values may be necessary are as follows: (1) Water vapor content, which the newest contracts tend to express in pounds per Mcf of gas; (2) Carbon dioxide content (CO_2) expressed as volume percent; (3) Nitrogen content (N_2) expressed as volume percent; (4) Condensible hydrocarbons, so-called natural gasoline fraction, expressed in (GPM) gallons per Mcf of gas; (5) Hydrogen sulfide (H_2S), which the newest contracts tend to express in grains per Mcf of gas; (6) Total sulfur, which the newest contracts tend to express in grains per Mcf of gas; (7) Oxygen (O_2) expressed as a volume percent; (8) Other liquids, solids, gums and gum forming constituents; (9) Maximum gas temperature expressed in ° F and; (10) Heating value expressed in Btu per cubic foot of gas.

First of all, fuel gas contract quality specifications must be practical. In estimating fuel gas contract quality specifications it is advisable to consider how restrictive one can be without adverse effect on procurement of the needed gas supply, development of gas reserves, and the competitive price of natural gas in the fuel markets.

Typical natural gas purchased for resale as fuel gas by the transmission companies is primarily methane. The methane molecule has only one carbon atom; thus, the numerical carbon tag for methane is C_1. (The numerical carbon tag of the respective hydrocarbons is in direct

relation to their relative molecular weights.) Methane remains in gaseous form under all pressure and temperature conditions experienced in natural gas transmission and distribution pipelines, but it can be reduced to a liquid in a cryogenic environment to produce LNG.

Next to methane in molecular weight is the ethane hydrocarbon compound whose molecule has two carbon atoms, and its numerical carbon tag is C_2.

Typical natural gas also contains varying concentrations of hydrocarbon compounds heavier than methane and ethane. These include the so-called liquefiable hydrocarbons propane (C_3) and butane (C_4), and the yet heavier so-called condensible hydrocarbons consisting of the pentanes (C_5) and heavier hydrocarbons.

When natural gas is produced, the natural gasoline component (C_5 and heavier hydrocarbons) is often present to some extent disbursed in either a vapor or aerosol state with the base gas methane and other gaseous compounds.

Since hydrocarbon liquids are valuable as heating fuel, motor fuel, petrochem feed stock, etc., the producers of large natural gas volumes often find it profitable to install processing plants for extracting recoverable liquids before selling the gas to the pipeline companies. The residue (processed) gas from such plants normally has no more than a negligible liquefiable hydrocarbon content remaining, and its transportation will not result in the deposit of appreciable amounts of liquids in the transmission lines and distribution systems.

However, it must be remembered that an appreciable portion of the gas made available to natural gas transmission companies ordinarily comes from small reservoirs where the quantity of producible gas may be too small for profitable processing for the removal of the heavier hydrocarbons. With these relatively small quantities of gas, the only processing economically feasible may be that

which takes place when the gas flows through the field separators and dehydrators. However, properly designed field separation equipment of sufficient capacity and adequately maintained have proven effective in removing all free liquids from the flowing natural gas stream. Under these conditions, the gas and vapor stream delivered to the pipeline generally has a low water content; and as for hydrocarbons is, for all practical purposes, stabilized at the contract pressure, temperature and velocity conditions which exist in the field separators from time to time. Since it appears that average operating conditions in the major natural gas production area have been such as to provide approximately 0.2 GPM, this value has by common usage become a criterion in limiting the natural gasoline content by means of the natural gas purchase contract.

Since such field separator gas constitutes an essential portion of the nation's currently available fuel gas supply, it must be gathered and transported to the ultimate consumers. However, any attempt to transport and distribute field separator gas over long distances by itself can result in the accumulation of appreciable hydrocarbon liquids in the carrier lines as flowing conditions change. To avoid excessive liquid condensation in transmission and distribution lines, particularly during the cold season, the natural gasoline content of the gas stream should be as low as possible. Fortunately the natural gas transmission companies have tendered to them more of the lean processed gas than of the rich field separator gas. The commingling of the rich gas with the lean gas usually results in a composite transmission line gas stream having a condensible content of less than 0.1 GPM. With a composite stream GPM in this range, the accumulation of liquids in the main gas transmission lines and distribution system normally does not exceed an amount which can be routinely removed and disposed of by the respective operators. Studies indicate that in most cases further processing of the large volume com-

paratively lean composite gas streams of the transmission companies in an attempt to avoid the possibility of any liquid condensation in the gas transmission and distribution lines cannot be economically justified. Currently it appears that such processing could only increase the cost of the gas to the ultimate consumer. Therefore, for obvious reasons the supplier, transmission company and distribution company must each respectively recognize its own responsibility for equipping its systems with the necessary facilitates [sic] for the trapping and disposing of any hydrocarbon condensation which might occur at the pressure, temperature, and flow conditions likely to occur while the gas is in its custody.

In regard to water vapor content, it has been noted that in most cases the fuel quality natural gas transported to the wholesale markets by gas transmission companies carries an average water vapor content in the range of .002 to .004 pounds per Mcf. This low water vapor content is due to the generally high efficiency of the dehydration equipment of the gas suppliers in the production area. With the flowing conditions experienced in the major natural gas transmission systems in the continental U.S.A. (lower 48), they appear to be susceptible to hydrate formation at various water contents above .007 pounds/Mcf. Thus, the water vapor content of the gas supply gathered by the transmission companies is generally limited by contract to a maximum of .007 pounds per Mcf or less.

Carbon dioxide (CO_2) and nitrogen (N_2) are two components, often present to some extent in natural gas, that do not burn; thus, they are diluents which have the effect of lowering the heating value of the gas. In addition, CO_2 is corrosive to steel if water is also present; therefore, the gas purchase contracts of natural gas transmission companies usually limit the allowable CO_2 content to the lowest practical value under controlling circumstances.

The record indicates that oxygen exceeding an insignificant concentration is not often present in natural gas produced under positive pressure; however, to guard against unforeseen developments, the gas purchase contracts of natural gas transmission companies usually include a limitation as to allowable oxygen content, e.g. 0.2% by volume.

It appears that the sulfur compounds in fuel quality natural gas consist primarily of hydrogen sulfide (H_2S) and mercaptans (RSH) although trace quantities of other sulfur compounds are sometimes detectable. Hydrogen sulfide (H_2S) is very corrosive as well as toxic, but fortunately in most cases its presence in the natural gas which we have in mind is of insignificant proportions. To assure continuous surveillance of the H_2S content, it is customary for the maximum allowable H_2S content to be specified in gas purchase and sales contracts. The maximum allowable content is usually set at a practical value which provides a reasonable operating tolerance, e.g. 10.0 grains per 1000 cu. ft. of gas. In comparison with the H_2S content, the mercaptans and miscellaneous sulfur compounds normally are present in much smaller concentrations. Nevertheless, to guard against unforeseen increases in sulfur compounds as a whole, the gas purchase contracts and sales tariffs customarily set a practical limit as to the allowable total sulfur content, e.g., 100 grains per 1,000 cu. ft. of gas.

CHECKLIST FOR CONTRACT MEASUREMENT CLAUSE

NOTE: Selective use of the optional wordage offered in the following clauses is necessary in order that the peculiarities of each individual contract might be served. Blanks have been left for filling in values agreed upon where they differ from those offered. No contract should be prepared without consulting an attorney.

Measuring Stations:

1. Seller/Buyer shall install, maintain and operate, at Seller's/Buyer's own expense, at a location mutually agreeable, at or near the point of delivery, the Official Billing Measurement Station which shall consist of a measuring facility and all necessary auxiliary devices as approved by the representatives of parties hereto.

If orifice meters are used they shall utilize ———— "Taps" and shall be designed, installed, maintained and operated, and have volumes computed as may be mutually agreed upon by the parties in writing. The installation, operation and maintenance of the auxiliary devices used in the measurement of the gas shall be as may be mutually agreed upon by the operating representatives of the parties.

Seller/Buyer shall have access to all such official billing measurement equipment at reasonable hours, but the calibrating and adjusting thereof and the changing of charts shall be done by Seller/Buyer.

2. Seller/Buyer may install, maintain and operate, at its own expense and on its own property, such pressure-volume control regulators, check measuring equipment, instruments, and telemetering devices as it shall desire. Seller/Buyer hereby grants to Seller/Buyer the right to install, maintain and operate check measuring instruments and telemeters in and connected to Seller's/Buyer's official billing measuring station, provided that such instruments and connections shall be so installed as not to interfere with the operation or future revision of Seller's/Buyer's official billing meters and/or appurtenances, and Seller/Buyer shall indemnify and hold Seller/Buyer harmless from liability arising out of the installation, operation, maintenance, and removal of such appendages to the official billing measuring station. Seller/Buyer shall have access to any such check measuring and/or telemetering instruments at reasonable hours, but the read-

ing, calibrating and adjusting thereof and the changing of charts shall be done by Seller/Buyer.

3. Each party shall have the right to be present at the time of any installing, reading, cleaning, changing, repairing, inspecting, testing, calibrating, or adjusting done in connection with the other's measuring equipment installed hereunder. The records from such measuring equipment shall remain the property of their owner, but upon request each party will submit to the other its records and charts, together with calculations therefrom, for inspection and verification, subject to return within —— days after receipt thereof.

4. In the event a billing meter is out of service, or is determined to be registering inaccurately, the volumes of gas delivered hereunder during such period or periods shall be estimated by:

a) using the registration of any approved check meter or meters existing and agreed upon as being accurately registering, or;

b) correcting the error if the quantity or percentage of error is ascertainable by calibration, test, or mathematical calculation or, in the absence of both a), and b), then;

c) relating the quantity of delivery to deliveries during periods under similar conditions when the billing meter was deemed to have been registering accurately.

5. The accuracy of each party's measuring equipment shall be verified by such party at reasonable intervals, and, if requested, in the presence of representatives of the other party, but such verification shall not be required as a matter of routing more frequently than once in any thirty (30) day period. In the event either party shall notify the other that it desires a special test of any measuring equipment, the parties shall cooperate to secure a

prompt verification of the accuracy of such equipment. The expense of such special test as may be requested by either party shall be borne by the party requesting such test if the measuring equipment, by such test, is found to be correct.

6. If, upon test, any billing meter or any related instrument or device the readings of which are used in the registration, integration, or computation of quantities which affect the billing hereunder is found to be in error to the extent that it introduces not more than a 2% measurement error in the individual billing meter or meters affected, previous records of such equipment shall be considered accurate in computing deliveries hereunder; but such equipment shall be adjusted at once to function correctly. If, upon test, any such measuring equipment shall be found to be inaccurate to the extent that it causes the end result measurement of the individual billing meter or meters so affected to be in error by an amount exceeding two percent (2%), at a recording corresponding to the average hourly rate of flow through the individual billing meter or meters affected, for the period since the last preceding test, then any previous registration, integration or recordings of such billing meter or meters affected shall be corrected to zero error for any part of the period since the last test which such error is known to have existed or which may be agreed upon in actual practice by the operating representatives of the parties. In case the period of such error is not known definitely or is not agreed upon, such correction shall be for a period of one-half (½) of the time elapsed since the date of the last such test, but not exceeding a correction period of sixteen (16) days.

7. Each party shall preserve for a period of at least —— years all test data, charts and other similar records applicable hereunder.

Measurements:

1. Computation and or integration of quantities shall be in accordance with standard industry practice.

2. The sales unit of the gas deliverable hereunder shall be (1) one Mcf of gas, (2) one pound of gas, or (3) one dekatherm of gas.

3. The (1) Volume (2) Weight or (3) Energy of the gas delivered hereunder shall be determined as follows:

a-1) The unit of Volume for the purpose of measurement shall be one (1) cubic foot of gas at sixty (60) degrees Fahrenheit temperature and at a pressure of 14.73 —— pounds per square inch absolute.

a-2) The unit of Weight for the purpose of measurement shall be one (1) pound mass of gas.

a-3) The unit of Energy for the purpose of measurement shall be one (1) Btu ——.

b) The average atmospheric pressure at the point of measurement shall be assumed to be ——— ——— pounds per square inch, irrespective of actual elevation or location of the point of delivery above sea level or variations in such atmospheric pressure from time to time.

c) If meter or meters requiring flowing gas temperature determination are used the temperature of the gas passing the meters shall be determined by the use of a continuous recording or integrating temperature device or devices installed so as to properly record or integrate into the computations the temperature or the effect of the temperature of the gas folowing [sic] through the meters. The arithmetical average of the temperature recorded during periods of gas flow only shall be used when computing gas volumes.

d) If meters requiring the determination of the gas specific gravity are used, the specific gravity of the gas delivered hereunder shall be determined by the continuous use of a recording gravitometer, unless in actual operation the representatives of the parties hereto unanimously agree to the use of an accumulative gas sampling method, a spot test method, or molecular weights ratio. If a method other than continuous recording of the specific gravity of the gas is used, the specific gravity shall be determined ———— or as much more often as found necessary in practice. The specific gravity determined by any specific test shall be made effective ———— and shall remain in effect until superseded by the next regular or special test.

4. When an undisputed error of appreciable quantity is found to have occurred in the computations of any billing gas quantities, equivalent adjustments shall be made to compensate for such error upon request by either party providing such request is made within —— months after the end of the monthly billing period in which such error occurs.

CHECKLIST FOR CONTRACT QUALITY CLAUSE

NOTE: The quality specifications suggested below are most applicable to fuel quality natural gas as procured from various sources at or near the producing fields to be transported by natural gas transmission companies for resale to gas distribution companies, etc.

Selective use of the optional wordage offered in the following clauses is necessary in order that the peculiarities of each individual contract might be served. Blanks have been left for filling in values agreed upon where they differ

from those offered. No contract should be prepared without consulting an attorney.

1. *Natural Gas*: The gas delivered hereunder shall be natural gas of the quality and composition produced by nature in the petroleum, oil, and natural gas fields from which Seller directly or indirectly obtains its supply, with only such processing being required as may be necessary to condition the gas to meet the quality specifications hereunder.

2. *Heating Value*: No natural gas delivered hereunder shall have a "total heating value" at Point of Delivery below ——— British Thermal Units (Btu) per cubic foot of the gas (assumed to be dry) (assumed to be saturated with water vapor) at a temperature 60° Fahrenheit, and under a pressure of (14.73) psia. The average total heating value of the gas shall be determined for any billing period by method or methods agreed upon between the operating representatives in actual practice.

3. *Absence of Impurities*: Seller recognizes its obligation to provide fuel quality natural gas containing the least concentrations of separable materials which is economically feasible:

The gas delivered hereunder:

a) shall be commercially free from duct, gum, gum forming constituents, and liquids at the pressure and temperature at which the gas is delivered.

b) shall have no more condensible hydrocarbons in free liquid form than that which constitutes a wetting of the pipe walls in the lines on the inlet side of any pressure reducing regulator in the delivery facilities, or in the absence of such regulator no more such free hydrocarbon liquids shall be present in the piping at the point of delivery than that which constitutes a mere dampening of the pipe walls.

c) shall not contain more than a trace indication of oils and other liquids which are employed in the operation of the seller's gas processing and compression facilities.

d) shall not have a water vapor content in excess of .006 ——— pounds of water vapor per thousand cubic feet of gas at a base pressure and temperature of (14.73) psia and 60° F. The water vapor should be determined by the use of dew point apparatus approved by the Bureau of Mines or by any other method that is mutually agreeable.

e) shall not contain more than —— grains of hyrdogen sulfide per 1000 cubic feet of gas volume as determined by the Tutweiler test or some other quantitative test, mutually agreeable to both parties, after the presence of hydrogen sulfide has been indicated by qualitative test.

f) shall not contain more than 100 —— grains of total sulfur per 1000 cubic feet of gas volume, in addition to any sulfur compounds contributed by gas odorants which may have been added to the gas.

g) shall not contain in excess of:
(2.0) —— % by volume of carbon dioxide;
(0.2) —— % by volume of oxygen; or
(0.2) —— gallons per Mcf of gas, of those certain liquefiable hydrocarbons whose molecular weight is equal to or heavier than pentanes, commonly referred to as natural gasoline, as determined by fraction analysts or some other method mutually agreeable to both parties.

h) shall not have temperature of more than (120) —— ° Fahrenheit.

4. All measurements of gas required in this Article shall be expressed at a base temperature of sixty degrees

(60°) Fahrenheit and except as otherwise specifically provided to the contrary herein shall be at a base pressure of fourteen and seventy-three hundredths (14.73) pounds per square inch absolute.

5. *Odorization*: No odorant shall be added to the gas for the specific purpose of this contract. If Seller for any reason odorizes the gas stream from which the gas hereunder is delivered, such odorization is not to be construed as interfering with the merchantability of the gas delivered hereunder.

6. *Failure to Conform to Specifications*: If the gas offered for delivery hereunder shall fail at any time to conform to any of the quality specifications herein set forth, then Buyer shall notify Seller of such deficiency and may, at its option, refuse to accept further delivery pending correction by Seller.

NOTES

Only those items ordinarily found in the Gas Measurement and Quality Clauses of the standard form Gas Contract have been named in this Report although other contract items have a bearing on gas measurement activities. Among such items are the term of the contract; definition of a contract day, month and year; the point of delivery; the delivery pressure; contract quantity; unit price and billing, etc.

Brevity has been employed in this first edition of the A.G.A. Gas Contract Measurement and Quality Clause Report to encourage brevity in contract clause language. It is felt that the national standard base pressure and perhaps other essential items appearing in gas contracts will eventually be standardized making it possible to relate to the industry a complete set of accepted specifications in some future edition of this Report.

In early considerations relative to the Measurement Committee's plan to add gas contracts to its list of regu-

lar published reports, the consensus was that the primary objective of the intial [sic] report should be to serve as a sounding board to aid in refining the technique of reporting on this particular subject.

Those who have questions or suggestions should address correspondence to the Chairman, Measurement Committee, American Gas Association, at the address given on the front page of this publication.

APPENDIX H

GENERAL ORDER
No. 58-B
(Supplemental to General Order No. 58-A)

PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

STANDARDS OF CALORIMETRY FOR GASEOUS FUELS

Approved December 28, 1955—Effective January 17, 1956

(Decision No. 52401, Case No. 4720)

IT IS HEREBY ORDERED that the following rules be adopted, effective January 17, 1956, to govern all gas corporations as defined in the Public Utilities Code,[1] in the determination of heating values of fuel gases. This order is supplemental to General Order No. 58-A, which requires utilities to provide and maintain calorimeter testing stations, and shall not relieve any gas corporation from complying with the provisions of General Order No. 58-A.

The order herein comprises the following sections and appendix:

1. Applicability of Rules
2. Deviations from Rules
3. Definitions of Terms
4. Types of Calorimeters
5. Standards for Recording Calorimeters

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[1] "Gas corporation" includes every corporation or person owning, controlling, operating, or managing any gas plant for compensation within this State, except where gas is made or produced on and distributed by the maker or producer through private property alone solely for his own use or the use of his tenants and not for sale to others. Gas corporations are also herein referred to as "utilities" or "gas utilities."

6. Standards for Water-Flow Calorimeters
7. Minimum Requirements

Appendix 1, Standard Method for Installing, Operating, Testing and Maintaining Recording Calorimeters Manufactured by Cutler-Hammer, Inc.

1. Applicability of Rules

a. The following rules shall apply to any person, firm or corporation now or hereafter engaged as a public utility in the business of furnishing manufactured gas, natural gas, hydrocarbon gas, or a mixture of fuel gases for domestic, commercial, industrial or other purposes within the State of California where the gas service rendered is subject to the jurisdiction of the Public Utilities Commission of the State of California.

b. When a change is desired in the type of calorimeter to be used at a given calorimeter station a request shall be made to the Commission by the utility, briefly stating the authorization sought, the type of calorimeter presently being used at the calorimeter station, the type of calorimeter desired to be used at the station in the future, and the major reason for making the change.

2. Deviations From Rules

In no case shall any public utility deviate from the methods herein set forth except with special written authorization from the Commission. If hardship results from the application of any rule herein prescribed because of special conditions, application may be made to the Commission for authorization to deviate therefrom. Such request for deviation authority shall set forth a complete justification of the proposed procedure.

3. Definitions of Terms

a. Fuel Gas

Any combustible gas or vapor, or combustible mixture of gaseous constituents, used to produce heat by burning.

b. Fuel Gas Calorimeter

An apparatus for determining the calorific (heating) values of fuel gases.

(1) Recording Calorimeter

An automatic device that continuously makes a written record of the heating value of a fuel gas or mixture of fuel gases on a chart.

(2) Water-Flow Calorimeter

A laboratory device for measuring the total and/or net heating value of a fuel gas or mixture of fuel gases in which the heat evolved by the complete combustion of a measured quantity of gas burning at a uniform rate is absorbed by a quantity of water also flowing at a uniform rate. The weight and increase in temperature of the water flowing during the interval that the measured quantity of gas is being burned furnish the primary data necessary for calculating the heating value of the gas.

c. Calimeter Station

The location at which a calorimeter is maintained for the purpose of determining the heating value of a fuel gas.

d. Standard Temperature

60° F., based on the international temperature scale.

e. Standard Pressure

The absolute pressure of a column of pure mercury 30 inches in height at 32° F. and under standard gravity (32.174 ft./sec.^{2}) or (980.665 cm/sec.^{2})

f. Standard Cubic Foot of Gas

The quantity of gas which, when saturated with water vapor and at a temperature of 60° F. and under a pressure of 30 inches in height of mercury at 32° F. (density 13.5951 grams/cc and acceleration of gravity 980.665 cm/sec.^{2}) occupies one cubic foot.

g. Dry Cubic Foot of Gas

The quantity of gas which, when free of water vapor at standard temperature and under standard pressure will fill a space of one cubic foot. The total heating value of one dry cubic foot of gas is equal to the product of the total calorific value per standard cubic foot and the constant 1.0177.

h. British Thermal Unit (Btu)

The quantity of heat that must be added to one avoirdupois pound of pure water to raise its temperature from 58.5° F. 59.5° F. under pressure.

i. Total Calorific Value

The number of British thermal units evolved by the complete combustion, at constant pressure, of one standard cubic foot of gas with air, the temperature of the gas, air and products of combustion being 60° F. and all of the water formed by the combustion reaction being condensed to the liquid state.

j. Net Calorific Value

The number of British thermal units evolved by the complete combustion, at constant pressure, of

one standard cubic foot of gas with air, the temperature of the gas, air and products of combustion being 60° F. and all of the water formed by the combustion reaction remaining in the vapor state. The net calorific value of a gas is its total calorific value minus the latent heat of vaporization at standard temperature of the water formed by the combustion reaction. Latent heat of vaporization of water at 60° F. = 1057.8 Btu per lb. or 50.37 Btu per standard cubic foot.

k. Theoretical Air

The volume of air that contains the quantity of oxygen, in addition to that in the gas itself, consumed in the complete combustion of a given quantity of gas.

l. Excess Air

The quantity of air passing through the combustion space in excess of theoretical air.

m. Combustion Air

The air passing into the combustion space of the calorimeter (theoretical air plus excess air).

n. Products of Combustion

All substances resulting from the burning of gas with its theoretical air, including the inert constituents of the gas and the theoretical air, but excluding excess air.

o. Flue Gases

The products of combustion remaining in the gaseous state, together with the excess air.

p. Certified Natural Gas

A sample of natural gas of certified heating value. The sample must be of constant composition and heating value and contain no condensibles that will

effect a change in its heating value with any temperature-pressure conditions to which the gas may be subjected.

q. Standard Hydrogen Gas

Hydrogen gas generated by the reaction of water on hydrone, an alloy of sodium and lead. (Purity approximates 99.94 per cent hydrogen.)

r. Reference Hydrogen Tank Gas

Hydrogen gas of commercial quality and purity stored in a tank or cylinder at high pressure, the heating value (theoretical scale reading) of which has been determined with standard hydrogen gas.

s. Reference Natural Gas

Natural gas of constant composition and heating value, the heating value of which has been accurately determined by use of certified natural gas or standard hydrogen gas. Such gas shall contain no condensibles that will effect a change in its heating value with any temperature-pressure change to which the gas may be subjected.

t. Condensate

The water that is condensed to the liquid state within the body of the calorimeter.

4. Types of Calorimeters

It is the intent of the Commission that this general order be applicable to all types of calorimeters; however, at the present time there are only two types of calorimeters in use of which the Commission approves. These are the recording and water-flow types. Each type is being manufactured only by a limited number of manufacturers. In the case of the recording calorimeter there is only one principal manufacturer, Cutler-Hammer, Inc., and in the case of the water-

flow type there are only a few manufacturers. Under these circumstances standards are provided or specified that treat specifically with the equipment produced by these manufacturers.

5. Standards for Recording Calorimeters

The standard methods for installing and operating recording gas calorimeters for determining the heating value (calorific value) of fuel gases applicable to the utilities using the Cutler-Hammer type of equipment are set forth in Appendix 1, attached to and made a part of this order.

6. Standards for Water-flow Calorimeters

a. The "Standard Method of Test for Calorific Value of Gaseous Fuels by the Water-Flow Calorimeter", published by the American Society of Testing Materials, ASTM Designation: D900-48, adopted 1948, is hereby prescribed as the approved method of the Commission for operating water-flow calorimeters by the gas utilities in the State of California.

b. The humidity correction procedure and the humidity control control procedure of the "Standard Method of Test for Calorific Value of Gaseous Fuels by the Water-Flow Calorimeter," are the approved standard procedures of the standard method and shall be adhered to in detail as each is described in publication ASTM Designation: D900-48, Adopted 1948.

c. Where a water-flow calorimeter is employed for making a heating value determination of a fuel gas no less than one set of duplicate heating value tests shall be made of that gas for each determination performed. The difference between the two heating value test results obtained shall not exceed 10 Btu per standard cubic foot. If a differ-

ence of 10 Btu per standard cubic foot is exceeded, additional heating value tests shall be run until two test results are obtained of a lesser difference than 10 Btu per standard cubic foot. The average of the first two test results having a lesser difference than 10 Btu per standard cubic foot shall be the accepted heating value test result for that determination.

7. Minimum Requirements

The requirements contained herein should be considered as minimum and any utility may adopt additional rules and practices provided they are not inconsistent with the provisions of this order.

Approved and dated at San Francisco, California, this 28th day of December, 1955.

PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

By R. J. PAJALICK, *Secretary.*

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APPENDIX I

LIST OF PARENT COMPANIES, SUBSIDIARIES, AND AFFILIATES REQUIRED BY RULE 28.1

Pursuant to Rule 28.1, Petitioners list their parent companies, subsidiaries (other than wholly owned subsidiaries), and affiliates. This list is limited to entities with stock or debt securities publicly traded in the United States or Canada:

AMINOIL INC.

Aminoil Inc. (formerly Aminoil USA, Inc.) is a wholly owned subsidiary of R. J. Reynolds, Inc.

The subsidiaries (not wholly owned) of Aminoil Inc. are:

Solar Gas, Inc.
Long Beach Oil Development

AMOCO PRODUCTION COMPANY

Amoco Production Company is a wholly owned subsidiary of Standard Oil Company (Indiana).

The subsidiaries and affiliates (not wholly owned by Standard Oil Company (Indiana) or a wholly owned subsidiary) of Amoco Production Company are:

Amoco Australia Limited
Amoco Canada Petroleum Company, Ltd.
Amoco Credit Corporation
Amoco Oil Holdings S.A.
Amoco (U.K.) Exploration Company
Analog Devices Inc.
Cetus Corporation
Cyprus Mines Corporation

ARCO OIL AND GAS COMPANY

ARCO Oil and Gas Company is a division of Atlantic Richfield Company.

The subsidiaries and affiliates (not wholly owned) of Atlantic Richfield Company are:

Alyeska Pipeline Service Company
Anaconda-Ericsson Inc.
Anamax Mining Company
Atlantic Richfield de Mexico, S.A. de C.V.
Aughinish Alumina, Ltd.
Aughinish Estates
Aughinish Finance, Ltd.
Badger Pipe Line Company
Bingham Development Company
Black Lake Pipe Line Company
Blair Athol Coal Pty., Limited
Caribou-Chaleur Bay Mines Ltd.
Colonial Pipeline Company
Cook Inlet Pipe Line Company
Delaware Bay Transportation Company
Dixie Pipeline Company
East Texas Salt Water Disposal Co.
Eisenhower Mining Company
Flower Street Limited
F.T.L. Company Limited
Gravity Adjustment, Inc.
Hardy Oil Company
Hydrokem Performance Chemicals Company
Imperial Eastman de Mexico, S.A.
Iricon Agency Ltd.
Jamaica Alumina Security Company Ltd.
Kenai Pipe Line Company
Kuparuk Transportation Company
Las Quintas Serenas Water Company
Lavan Petroleum Co.
Mayflower Mining Company
R. W. Miller (Holdings) Limited
Minera Anaconda Limitada
Montoro, Empresa Para La Industria Quimica
New Bingham Mary Mining Company
Nihon Oxirane Company, Ltd.

Oil Shippers Service, Inc.
P. T. Arutmin Indonesia
Park Cummings Mining Company
Park Premier Mining Company
Participaciones Mexicanas, S.A. de C.V.
Platte Pipe Line Company
Productos Especiales Metalicos, S.A.
Sinclair Venezuelan Oil Company
Smoke House Copper Mining Company
Solvamex, S.A. de C.V.
Tecumseh Pipe Line Company
Texas-New Mexico Pipe Line Company
Trans Mountain Oil Pipe Line Company
West Mayflower Mining Company
William Prym de Mexico S.A.

CHEVRON U.S.A. INC.

Chevron U.S.A. Inc. is a wholly owned subsidiary of Standard Oil Company of California.

The subsidiaries and affiliates (not wholly owned) of Standard Oil Company of California are:

AMAX Inc.
American Overseas Petroleum Limited
Caltex Petroleum Companies
Huntington Beach Company
Irving Oil Limited
Kenai Pipe Line Company
Planation Pipe Line Company

CONOCO INC.

Conoco Inc. is a wholly owned subsidiary of E.I. du Pont de Nemours and Company.

The subsidiaries and affiliates (not wholly owned) of Conoco Inc. are:

Cit-Con Oil Corporation (Delaware)
Conch International Methane Ltd. (Bahama Islands)

Conch L.N.G. (New Jersey)
Conoco Exploration, Ltd. (Delaware)
Bishop Coal Company (Delaware)
Conrhein Coal Co. (Partnership)
Cardinal River Coals, Ltd. (Alberta, Canada)
Neptune Bulk Terminals (Canada) Ltd. (Canada)
Contochu Inc. (Delaware)
Harmar Coal Co. (West Virginia)
Itmann Coal Co. (Pennsylvania)
Tongue River Railroad (Partnership)
Oasis Oil Co. of Libya, Inc. (Delaware)
Colonial Pipeline Company (Delaware)
Dixie Pipeline Company (Delaware)
Explorer Pipeline Company (Delaware)
Lake Charles Pipe Line Company (Delaware)
Pioneer Pipe Line Company (Delaware)
Platte Pipe Line Company (Delaware)
Seadock, Inc. (Texas)
Texas Offshore Port, Inc. (Delaware)
West Shore Pipe Line Company (Delaware)
Yellowstone Pipe Line Company (Delaware)
Kettleman North Dome Assoc. (California)
Maritime Protection Inc. (New York)
Oil Shippers Service, Inc. (Delaware)
Petroleum Terminals, Inc. (Indiana)
Iricon Agency, Ltd. (Delaware)
Southern Facilities, Inc. (Delaware)
The Standard Shale Products Company (Colorado)

EXXON CORPORATION

The subsidiaries and affiliates (not wholly owned) of Exxon Corporation are:

Exxon Pipeline Company
Imperial Oil Limited
Reliance Electric Company

GETTY OIL COMPANY

Getty Oil Company has no subsidiaries or affiliates which are not wholly owned.

GULF OIL CORPORATION

The subsidiaries and affiliates (not wholly owned) of Gulf Oil Corporation are:

A/S Jargul
A/S Jargul and Co. K/S
AB Djurgardsberg
Adela Investment Company, S.A.
Allied—General Nuclear Services
Andogas S.A. (Switzerland)
Asia Polymer Corp
China Gulf Oil Company Limited
Chinhae Chemical Company, Ltd.
Colonial Pipeline Company
Delaware Bay Transportation Company
Det Gronlandske Olieaktieselskab
Dixie Pipeline Company
Emery Joint Venture
Explorer Pipeline Company
Forenade Svenska Oljeimportorers AB
Gulf Canada Limited
Gulf Oil Canada Limited Associated Companies
Gulf Oil Corporation Erisa
Gulf Oil Terminals (Ireland) Limited
Gulf Oil Zaire S.A.R.L.
Harshaw—Juarez S.A. de C.V.—H/FP
Harshaw Galvanotecnia S.A.—H/FP
Harshaw-Bryce & Co. Pty. Ltd.—H/FP
Harshaw-Murata Kabushiki Kaisha—H/FP
Harshaw/Filtrol Partnership—H/FP
Hochtemperatur Reaktorbeau GMBH
Insco Holding & Finance Company N.V.
Keydril (Nigeria) Limited
Kuwait Oil Company Limited
Laurel Pipe Line Company

Mainline Pipelines Limited
Mid-Valley Pipeline Company
Midwest Carbide Corporation
North River Energy Company
Oil Shippers Service, Inc.
Oklahoma Nitrogen Company
Paloma Pipe Line Company
Pembroke Capital Company
Pembroke Cracking Company
Petrosil Oil Company Limited
Plastigama, S.A.
Plastijal Sociedad Anonima
Platte Pipeline Company
Pyropower Corporation
Raffinerie de Cressier S.A.
Rio Blanco Oil Shale Partnership
Sarni S.P.A.—Refining
Solvent Refined Coal International, Inc.
Sunrise International Company Limited
Svensk Petroleum Administration A.B.
Svensk Petroleum Largring Tre A.B.
Svenska Petroleum Forvalting A.B.
Taita Chemical Corporation
Valley Pines Associates
Venezuela Gulf Refining Company
West Texas Gulf Pipe Line Company

MOBIL OIL EXPLORATION; MOBIL OIL EXPLORATION AND PRODUCTION SOUTHEAST, INC.; AND MOBIL PRODUCING TEXAS AND NEW MEXICO, INC.

Mobil Oil Exploration and Producing Southeast, Inc. and Mobil Producing Texas and New Mexico, Inc. are wholly owned affiliates of Mobil Oil Corporation.

The subsidiaries and affiliates (not wholly owned) of Mobil Oil Corporation are:

Mobil Alaska Pipeline Company

PENNZOIL COMPANY

The subsidiaries and affiliates (not wholly owned) of Pennzoil are:

Eureka Pipe Line Company
National Transit Company
Pennesco, Inc.
Proven Properties, Inc.

PHILLIPS PETROLEUM COMPANY AND PHILLIPS OIL COMPANY

Phillips Oil Company is a wholly owned subsidiary of Phillips Petroleum Company.

The subsidiaries and affiliates of Phillips Petroleum Company are:

Acurex Corporation
Arctic LNG Transportation Company
Bruin Carbon Dioxide Corporation
Calatrava, Empresa para la Industria Petroquimica, S.A.
Canyon Reef Carriers
Cochin Refineries Limited
East Texas Salt Water Disposal Company
Heat Transfer Research, Inc.
Kenai LNG Corporation
Oil Insurance Limited
Papago Chemicals, Inc.
Phillips Carbon Black Limited
Phillips Gas Supply Corporation
Phillips Pacific Chemical Company
Plasticos Vanguardia, S.A.
Polar LNG Shipping Corporation
The Salk Institute Biotechnology/ Industrial Associates, Inc.
White River Shale Oil Corporation
Aero Oil Company
Canada Western Cordage Company Limited
Chisholm Pipeline Company

Everglades Pipe Line Company
Explorer Pipeline Company
Kaw Pipe Line Company
Nordisk Kemi AB
Nordisk Philblack AB
Norland GmbH Fur Grundbesitz Und
Industrieanlagen
Norpipe Petroleum UK Limited
Norsea Gas GambH
Quimica Venoco C.A.
Renalit—Fertighaus GmbH
Seadock, Inc.
Seaway Pipeline, Inc.
Spodco-USA, Inc.
Texas Offshore Port, Inc.
Venezoil, C.A.
Western Desert Operating Petroleum Company
Colonial Pipeline Company
Compagnie Francaise Du Carbon Black
Dixie Pipeline Company
Drisco, S.A. de C.V.
Industrias Negromex, S.A. de C.V.
Petrochim
Spodco Limited
Trenwick Limited
Great Yarmouth Port Labour Company Limited
Norsea Pipeline Limited
Phillips-Imperial Petroleum Limited
(owned by Subsidiary of Phillips Petroleum Company United Kingdom Limited)
Philmac Oils Limited
Philmac Panama Incorporated
Sevalco (Holdings) Limited
Iranian Marine International Oil Company
("Iminoco")
Alyeska Pipeline Service Company
Insurance & Reinsurance Brokers (Bermuda) Limited
Norpipe a.s.

Norsea Gas A/S
Phillips Carbon Black Company (Proprietary) Limited
Phillips Carbon Black Italiana S.p.A.
Phillips Petroleum Singapore Chemicals (Private) Limited

PLACID OIL COMPANY

Placid Oil Company is a privately owned corporation. Placid has no subsidiaries or affiliates which are not wholly owned.

SHELL OIL COMPANY

Shell Oil Company is affiliated with Shell Energy Resources Inc., Pecten International Company, Shell California Production Inc., Shell Mining Company, Shell Western E&P Inc., Pecten Limited and Pecten Trading Company. All of the stock of the companies other than Shell Oil Company is owned directly or indirectly by Shell Oil Company. Approximately 69 percent of Shell Oil Company's stock is owned of record or by beneficial title by Shell Petroleum N.V., a Netherlands company. The voting shares of Shell Petroleum N.V. are held 60 percent by Royal Dutch Petroleum Company and 40 percent by Shell Transport and Trading Company, a Public Limited Company in London, U.K. The following companies are affiliated with Shell Oil Company or one of the affiliates named above, but are not wholly owned subsidiaries:

Quazite Corporation
First Harlem Securities Corporation
Fractionation Research, Inc.
Gravcap, Inc.
Heat Transfer Research, Inc.
Inland Corporation
LOOP, Inc.
MESBIC Financial Corporation of Houston

Oil Companies Institute for Marine Pollution Compensation Limited
Oil Insurance Limited
Pioneer Equipment Co.
Seadock, Inc.
Pecten Cameroon Company
Thums Long Beach Company
East Texas Salt Water Disposal Company
Grande Ecallie Land Company, Inc.
Van Salt Water Disposal Company
Wyoming Industrial Development Corporation
Cortez Capital Corporation
Plastibeton, Inc.
Butte Pipe Line Company
Dixie Pipeline Company
Explorer Pipeline Company
LOCAP, Inc.
Olympic Pipe Line Company
Plantation Pipe Line Company
West Shore Pipe Line Company
Wolverine Pipe Line Company

SUN EXPLORATION AND PRODUCTION COMPANY

Sun Exploration and Production Company is a wholly owned subsidiary of Sun Company, Inc.

The subsidiaries and affiliates (not wholly owned) of Sun Company, Inc. are:

Alaska Bulk Carriers, Inc.
Becton, Dickinson and Company
Canyon Reef Carriers Inc.
Hemisphere Oil Company, Inc.
Deepsea Ventures, Inc.
Mid Valley Pipeline Co.
Texoma Pipe Line Co.
Sun Olin Chemical Co.
International BioMedical Instruments, Inc.
The VLM Corporation
White River Shale Oil Corporation

THE SUPERIOR OIL COMPANY

The affiliates and subsidiaries (not wholly owned) of Superior are:

Falconbridge Limited
McIntyre Mines Limited

TENNECO OIL COMPANY

Tenneco Oil Company is a wholly owned subsidiary of Tenneco Corporation, which is a wholly owned subsidiary of Tenneco Inc.

The affiliates and subsidiaries (not wholly owned) of Tenneco Inc. are:

Akulu Chemicals (PTY.) Limited
Akulu Marchon (PTY.) Limited
Albright & Wilson (Australia), Ltd.
Albright & Wilson Match Phosphorus Company, Ltd.
Arndale Fuels, Ltd.
Bracey Petroleum Products, Ltd.
Butler Oil Products Ltd.
Collins Pipeline Company
Depositas Del Norte, S. A.
HT Gathering Company
Intertractor Viehmann GmbH & Co.
J. I. Case do Brasil & Cia.
Kern Island Water Company
Kern River Canal and Irrigating Company
Losenhausen Maschinenbau Ag
Marchon—Paragon Holdings (PTY) Ltd.
Marchon—Paragon Sulphonation (Cape) (PTY) Ltd.
Marchon—Paragon Sulphonation (PTY) Ltd.
Mistal Inc.
Monroe Auto Pecas S. A.
P.P.M. Guindastes Hidraulicos S. A.
S. A. Paper Chemicals Company (Proprietary) Limited
Societe Anonyme Industrille de Resines

Stoco Mutual Water and Sewer Company
Tees Storage Limited
Tenngasco Gas Gathering Company
TENN-USS Checicals Finance Corporation
T & M Terminal Company
Tractortechnic Canada, Ltd.
Vibromax France S.A.R.L.

TEXACO INC.

The subsidiaries and affiliates (not wholly owned) of Texaco Inc. are:

Caltex Australia Limited
Duetsche Texaco Aktiengesellschaft, S.I.A.M.
Koa Oil Company
Korea Tanker Company Limited
Texaco Canada Inc.
Texaco Ghana Limited
Texaco Mexicana, S.A. de C.V.
Texaco Nigeria Limited
Texaco Togo
The Great Eastern Oil & Import Co. Limited

UNION OIL COMPANY OF CALIFORNIA

Union Oil Company of California is a wholly owned subsidiary of Unocal.

The subsidiaries and affiliates (not wholly owned) of Unocal are:

Keneb Services, Inc.
Magma Power Company